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## TWO TWILIGHT ZONES IN HEALTH ADMINISTRATION


E. R. KELLEY, M. D.

*Massachusetts Commissioner of Public Health; President, Conference of State and Provincial Health Authorities, 1921-1922*



Presidential address delivered at the thirty-seventh annual meeting, Conference of State and Provincial Health Authorities of North America, Washington, D. C., May 15, 1922


IN the past twenty years there has been an enormous expansion in the public-health administration field. Vital statistics, control of communicable disease and its accompanying laboratory activities, sanitary engineering and the abatement of nuisances occupied almost exclusively the attention of professional sanitarians twenty years ago. In the province of the communicable diseases, the three greatest problems as measured by the death-rate—syphilis, tuberculosis and pneumonia—only tuberculosis was receiving any consideration. Since then the obligation of health departments towards syphilis has been universally acknowledged and met, and the machinery of our antituberculosis work has grown to vast proportions. Pneumonia still evades effective public-health control. Such subjects as the hygiene of maternity and infancy, cancer, rural sanitation, dental hygiene, nutrition, posture and a number of others have since been added to the duties and functions of public-health departments.

The proceedings of this organization itself during the past two decades definitely reflects this shift of emphasis, this annexation of new territories by the public-health administrator. No longer does the transportation of the dead hold indisputed places as the primary topic of discussion in our deliberations, as was the case for many years within the memory of several in this room. Instead, we witness and participate in active discussions of the best methods of the carrying on by official health organizations of a great variety of activities, as for example, the conduct of health centers, which never concerned the public-health administrators of 1902. It is true that voluntary health organizations have originated the technique of procedure in most of these activities, and that in many of them, the larger share, present effort is still being carried out by voluntary agencies. Nevertheless, the voluntary societies interested in these various types of hygiene, whether general or personal in scope, have been the chief advocates of the transfer of such functions to the official health departments, and in many instances have actively concerned themselves in bringing about such a result. Along with this development has grown a tendency in recent years on the part of sanitarians gradually to increase to a large degree their pretensions as to jurisdiction in the fields of both public and personal hygiene.

If the indisputable axiom that the health of personnel is a fundamental con-

sideration in all lines of human accomplishment is taken as a basis and pushed hard enough, a plausible argument can be found for active interference on the part of the health department in the affairs of all other governmental departments, the processes of industry and commerce, the conduct of social gatherings, the intimacies of family life, even the hallowed rites of the sanctuary. There is undoubtedly a definite danger that health administrators will come to be considered as pests and public nuisances as a result of the blatant campaign carried on in some quarters for the recognition of a quasi-divine right of health departments to regulate everything and everybody except themselves.

The time has come when official health departments should consider carefully these practical questions as to the actual extent of the legal and moral jurisdiction of the health department in modern developments of personal and group hygiene. It is clear that such functions as the control of cases of communicable disease, for instance, are exclusively the duty of the official health department. We cannot conceive of any health department dividing the responsibility for the practical carrying out of scarlet fever quarantine with a "Society for Undernourished Children." It is by no means so clear, however, that certain other health functions, even though distinctly governmental, may not in certain circumstances be more logically and smoothly administered by some other governmental department than the health department. Likewise, it still remains to be seen whether some of our recently recognized health problems, to the solution of which voluntary health societies are now bending their efforts, may not for an indefinite future period be more adequately handled by such agencies, rather than by any governmental departments.

I wish to present for the consideration of the sanitary authorities of the states and provinces who comprise this Conference two of these "border-line" or "twilight zone" public-health subjects which are in many ways closely linked to one another. They represent outstanding examples of the type of subject concerning which there is much opportunity for debate as to whether their future development and ultimate administration will lead toward the official health department or away from it. I refer to the subjects of school hygiene and mental hygiene.

The question of relinquishing the direct administration of one subject, school hygiene, to another governmental department, that of education, not only is, but has been for many years, a controversial matter.

We can scarcely speak of relinquishing the other subject, mental hygiene, to anybody, never having claimed it. This is the first occasion, I think, when this subject has had a place upon the program of this Conference. I believe there now exists in but one state, provincial, county or municipal health department on this continent an officially organized or recognized division of mental hygiene; yet it is apparent upon the most cursory reflection that mental hygiene is for all future time bound to be recognized as one of the greatest, if not the greatest branch of hygiene. The fact that it is largely rooted in the emotional and psychic life has long blinded us to the fact that this is not only a subject of basic importance to the public-health administrator in itself, but in many phases of what is usually considered purely physical hygiene, a satisfactory standard of achievement can never be reached without taking into account the relationship of the emotional and mental life.

Whether the future shall determine that public-health administrators shall carry out practically all phases of school hygiene, or whether they shall rather definitely divide this responsibility with the educators, as seems more logical and more likely, or whether the educators shall gradually push the public-health administrator entirely out of the school room, the school clinic, and even the

school yard, leaving him officially connected with the problem of the school child's health in school hours only by the nearest water main and sewer manhole—which would seem to be the objective of certain educators—cannot as yet be foretold. But whatever happens we health administrators must always maintain a deep, lively, and abiding interest in the problems of school hygiene. Having exercised oversight of the child prior to birth, and having guided him through the health perils of infancy and early childhood, whether we continue that supervision after he passes through the portals of our temples of learning, or share it with the guardians of those temples, or leave him entirely in their hands until he emerges to take his place in the world, the problems of his life and health must continue to be part of our job. Hence we cannot afford not to follow all developments of school hygiene with the deepest concern. The character of the mental and physical supervision which is exercised during these formative years will be directly traceable through our future morbidity and mortality records.

A survey of actual procedure in school hygiene in the United States reveals an astonishing number of methods of administration. There are some states where the obligation seems to have been placed upon state departments of education, and some where very definite duties in relation to school hygiene have been assigned to the state departments of health. A more surprising and disconcerting situation prevails in perhaps a majority of states, caused by the failure of state governments to provide any machinery whatsoever for an intelligent state-wide policy for the physical development and mental hygiene training of the child. It is hardly necessary for me to point out the necessity of differentiating between physical education for which state-wide machinery has now been provided in several states, and school hygiene in the broad sense.

In most states the method of functioning, or the choice of functioning at all, in matters of school hygiene is left in practice almost entirely to the local units of government. I think this is a reasonably fair statement even for states such as my own where the general minimal requirements of school hygiene administration are stipulated by statute because of the failure of the state to provide a mechanism for correlating or supervising the activities of local communities along this line.

In the local political units, cities, towns and school districts, there is much confusion concerning the actual administration of matters pertaining to school hygiene. In some states we find the health authorities of certain cities and towns solely responsible for the carrying out of school hygiene measures, while in nearby cities educational authorities exercise exclusive control. In others it is done on a coöperative basis, each department contributing towards personnel and expense, while in a fourth all too large group neither health nor school authorities are doing anything deserving of serious consideration in the field of school hygiene.

I believe the time has come when it would serve perhaps to clear the issue (I firmly believe nothing could add to the present confusion), if this body representing the official health departments of the states and provinces, could agree upon the fundamental lines of development and administration of school hygiene which it is believed ought to prevail, and then vigorously advocate the adopting and making effective of these policies throughout the length and breadth of America. Certainly with the present lack of coördination and lack of definite objectives on the part of either health or educational authorities, or at any rate lack of mutually accepted objectives, the American child is the loser, and his loss is not a minor or a negligible affair. In hundreds of thousands of instances the failure of the American school child to obtain a proper physical adjustment to his environment, due largely to the lack of a practical uniform policy in matters of school hygiene, spells

the difference between a happy useful adult life and a miserable existence handicapped by chronic physical defect, harassing minor ailment, or under-developed, weak body, unable to withstand the stress and strain of a complex civilization.

The time has passed when there is any valid excuse for mutual working-at-cross-purposes and misunderstanding in this most important public-health field. It is imperative that some generally applicable principles be adopted for the development of school hygiene. This matter will be fully discussed, I hope, before this Conference adjourns. Having called to your attention the essentially "border-line" character of this subject as an administrative problem and its vital importance to the future public welfare, I wish to present the following outline which seems to me to furnish an adequate and fair basis upon which to conduct such a discussion.

I. That the fundamental, basic importance to the life of each individual and to the future strength and prosperity of the two nations here represented of the subject of school hygiene deserves emphasis and wider appreciation.

II. That the direct immediate importance of school hygiene to health officials, educational officials and parents be acknowledged, recognized and emphasized.

III. That omitting many important sub-classifications of the subject, school hygiene looked upon broadly has two great divisions: (a) the health supervision of school children and (b) the health training or physical education of school children. These two terms are not synonymous as some seem to think, nor can the development of one serve as an excuse for neglect of the other, as many otherwise well-informed citizens seem to think.

IV. Since both health administrators and educational authorities must of necessity be vitally interested in the development of school hygiene, it would seem only fair and reasonable that provision should be made by statute in each state that the regulations governing the supervision of the health of the school child should be the business of both health and educational departments functioning as joint boards for this purpose.

V. The individual state or province should decide whether the initiation of such regulations should be vested in the state health and educational authorities, to be administered by the local boards, or whether local boards of health and education should originate such regulations.

The former method would give the great advantage of uniformity of essential practices, the latter method would be more flexible and bring responsibility directly home to those responsible for carrying out the work involved. If the latter principle of local control is to be followed, however, some reasonable arrangement for review and approval by the state authorities ought to be provided to insure against the indefinite continuation of chaos in matters pertaining to school hygiene such as prevails at present largely, at least throughout the United States.

VI. Finally and most debatable of all comes the question of by whom and in what manner the detailed administration of school hygiene is to be carried on in the school; who shall regulate hours of work by medical and nursing personnel in school hygiene, or be responsible for cost of adequate facilities for examination, health files, records, scales, etc.; adjustment of routine physical examinations and inspections of children in relation to teaching hours, and a score of other smaller matters.

It is my opinion that this subject will only develop as it should when two important principles or policies are generally accepted. The first is that the medical health supervision, using that term in the widest possible sense, of the school child, can best be carried out by the health departments.

The second is that everything pertaining to the health education of the child whether formal classroom teaching, teaching of physical health habits, includ-

ing dietary habits, habits designed to foster good mental hygiene or physical education, logically belongs to and should be administered by the educational authorities. To give all the reasons in support of and arguments against these basic propositions which might be brought forward, would lead us too far into detail for an address of this character, and, furthermore, as I have previously indicated, I hope that the subject will be thoroughly discussed during this conference. I wish now to briefly call to your attention the implications of a closely related subject, mental hygiene.

Mental hygiene has been well designated as the last of our great public-health movements to get under way. It is in fact all too little recognized today as a public-health movement.

Still less clearly defined than its essential character in the question of what, if any, governmental departments should be responsible for development and administration of mental hygiene. Although obviously a field far wider than that at present covered by state departments of mental disease, it is possible that such departments could be recast to include not only the function of mental hygiene but to have this serve as the foundation for all their other activities.

On the other hand, in a subject of this character where real success can only be achieved if the principles of mental hygiene are brought to bear upon society during the earliest stages of life, it is by no means certain that the development of this field cannot best be prosecuted through the educational systems, although it is apparent that no state, provincial or local board or department of education is today properly organized or equipped for this purpose.

Since mental hygiene is essentially a health problem, differing from our present well-recognized health problems because it has its being in the emotional and psychic life rather than in the bodily mechanism or environmental circumstance, very strong arguments can be readily adduced in favor of this subject becoming an active portion and a large division in the recognized scope, function and machinery of organization of health departments.

The most significant characteristic of the entire subject of mental hygiene today, however, is that generally speaking neither departments of health, mental diseases nor education officially recognize its existence.

Most commendable work is being done and great interest is being aroused in the subject in the two countries here represented, but entirely by voluntary societies and committees of mental hygiene. Individual members of governmental, psychiatric, educational and health organizations are taking a keen interest in participating in the activities of these voluntary societies, but public opinion has not yet advanced to the point where the obvious next step, the active official participation of one or all of these departments in the work of mental hygiene, has been demanded.*

Because it seems quite clear that such a demand will be made in the near future, the time seems to have arrived when this subject should be given a prominent and permanent place in the deliberations of this Conference. I earnestly recommend that we study this subject, solicit the assistance of representatives of voluntary societies for mental hygiene as advisory committee members, solicit also the coöperation of educational and psychiatric officials, and thereby see if this Conference cannot take the initiative in so shaping the development of this great and important phase of hygiene that the friction and misunderstandings that in the past have sadly marred and delayed the harmonious development of a continent-wide policy of school hygiene may be avoided.

*In this connection it is interesting to note that since the preparation of this paper two bills have been introduced in the Massachusetts Legislature, one providing for changing the name of the Massachusetts Department of Mental Diseases to the Massachusetts Department of Mental Health, and the other creating a Division of Mental Hygiene in the same Department. These bills indicate a growing recognition of the need for official organized effort along the lines of mental hygiene. The former of these bills has been referred to the next general court by the Legislature, and the other will probable receive a similar reference, but this will at least serve to bring this question before the Legislature again next year.

# RECENT APPLICATIONS OF THE PRINCIPLES OF NUTRITION

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DURING recent years the public has been well acquainted with generalities concerning nutrition. For the developing organism, physiologists have long since insisted on provision for growth, energy dissipation (heat and muscular, glandular, nervous and other bodily activities) and energy (fat) storage. Quite a long time ago it was taught that the human body must have protein, carbohydrates, fat, mineral salts and water. The need for salts was explained and clearly exposed and chemical considerations left no doubt in the student's mind as to the necessity for silicon, iron, fluorine and other elements occurring in minute quantities within the tissues.

Then came more definite knowledge of the energy (heat) values of the various food substances, and attention was directed to caloric indices, considerably to the neglect of other essentials.

The next advance consisted in the discovery of a sixth indispensable nutrition group, comprising substances which initiate and continue the growth impulse, and whose absence from the diet results in conditions exemplified by scurvy, beriberi, pellagra, xerophthalmia and cutaneous manifestations. These substances (fat-soluble A and water-soluble B and C), the so-called vitamines or growth-determinants, have received a fair share of the public interest and are being exploited just at present, as any novelties are likely to be.

The widespread and appalling undernourishment reflected by the war upon the children of Europe required rapid and accurate restatement of the principles of nutrition. The first response was a comparison, by experts and commissions, such as the Inter-Allied Scientific Food Commission, of daily nutritional needs as expressed in calories. Estimates of the daily ration, made on a basis of minimum cost consistent with bodily maintenance, inevitably included provision for the necessary fuel constituents, elements and compounds, protein and vitamines. Undernutrition and malnutrition demanded definition. Methods required resurvey. Post-war conditions in Europe exacted this revision *pari passu* with the establishment of child-labor laws and standards in America.

The question of bodily measurements arose. Various tables of height and weight were found to exist. In France and Belgium there were the figures of Bertillon, de Ley, Quetelet, Variot and Chaumet, Bouchaud, Comby and Sutils, Binet and Carlier. In England there were tables based on different school groups, and those of Roberts and anthropometric associations. Italy furnished data derived from the studies of Pagliani, Ricardi, De Giovanni, Viola and Frasetto, not to forget the primary impulse imparted by Lombroso. Germany offered the work of Rubner, Henning, Daffner and others, while suppressing certain statistics and recommendations made by her advisers. America had been depending on tables by Bowditch and Rotch. Most of the tabulations were fairly in accord when referring to the same ages, but some of the age-groups had not been sufficiently studied.

The United States Children's Bureau, confronted from the inception of its labors with the necessity for standards, practically recognized in 1918 the lack in America of dependable data on child

measurements. This it did by proclaiming the year 1918 a "Children's Year," and initiating a program devoted to the registration of weights, heights and other information referring to children distributed all over the United States. Some 15,000 children were weighed and measured. The figures obtained were fairly acceptable, although considered to be too high, since they probably represented an undue proportion of the more vigorous and well-developed children.

The United States Bureau of Education published data supplied by Dr. Thomas D. Wood who states that 20 per cent of American school children show evidence of malnutrition. He considers that a child 10 per cent below the normal weight for his height should be regarded as under-nourished. Dr. William P. Emerson gives 7 per cent under-weight as the normal limit. The Illinois Child Labor Law of July, 1917, tentatively provided for the fourteen year old child a standard of 80 pounds (36.36 kilograms) for weight and 56 inches (140 centimeters) for height. This standard was afterward lowered to 75 pounds (34.10 kilograms) weight, and 55 inches (137.5 centimeters) height. The latter figures may be considered to be somewhat below the normal, but are workable and represent the minimum consistent with normal health. (Standards of Child Welfare, p. 87.)

The several American organizations interested in the European child welfare situation have been obliged to consider all standards available for determining the state of nutrition in children for whom their resources have been enlisted.

This acute, almost painful, interest in nutrition is likely to be of long duration. For the next twenty years, at least, no questions will be of greater public importance than those related to food and growth. The production and maintenance of a vigorous population at minimum cost will be a problem which no nation can afford to neglect.

A suggestive scheme of nourishment of children en masse has originated in Vienna with Dr. Clemens Pirquet. Some of his theories, as developed in his "System of Nutrition," have proved exceedingly useful to the American Relief Administration, which has had most extensive experience in European child feeding. The impulse for these new suggestions was imparted by Rubner's theorem on the proportion existing between energy expenditure (and, therefore, food intake) and the external surface of the body.

However, before considering Pirquet's scheme, brief reference should be made to the Rohrer formula, which was used in Germany. This formula was employed by the American Friends Service Commission in their German child-feeding program. It is now chiefly of interest historically, since it led to confusion and had to be abandoned. The American Relief Administration also had experience with this formula, and writes:

"This Rohrer Index . . . occupies the same position in German child-feeding circles that the Pelidisi System occupies in Austria. . . . In using the system in our own child feeding in Danzig we found some peculiar results; for instance, numerous children after a period of regular feeding showed a poorer index than they had given previously, due to the fact that they had, either because of the feeding or simultaneously with it, started to grow, with the result that the Rohrer index, due to their increased height, required of them a greater increase in weight than they were able to show, while, as a matter of fact, their general condition had improved perceptibly and their eligibility for feeding had hence decreased."

According to the Rohrer formula, which includes the total height of the individual,

$$\frac{\text{Weight times } 100}{\text{Height cubed}} \text{ equals the state of nutrition.}$$

The quotient must be compared with a table of norms, which vary according to sex and age. For example, the normal indices for 6 and 15 years are, respectively, for boys, 1.583 and 1.251; for girls, 1.551 and 1.185.

Pirquet discusses food relation with reference to the absorbent surface of the intestine, depending on Henning's statement that the length of the intestine is equal to about ten times the body-height measured in the sitting position. The literature further shows that the transverse intestinal circumference, taking variations in tension into account, may be fairly stated as one-tenth of the sitting height. Therefore, if L equals the length of the intestine and Si the sitting height,

$$\text{Intestinal surface equals 10 Si times } \frac{\text{Si}}{10} \text{ or } \text{Si}^2$$

This relation, expressed in centimeters, holds good for any age.

Pirquet's studies lead to further derivations (*Lehrbuch der Volksernährung*, pp. 174 et seq.). The sitting height in centimeters, raised to the third power ($Si^3$), is stated to be about equal to 10 times the body weight. This equivalent is expressed by the symbol Ge, from the German *Ge*wicht, weight. It follows that the relations between weight, sitting height and intestinal surface may be thus expressed:

Cube root of Ge equals Ge to the one-third power, or Si (Cube root of Ge)$^2$ equals Ge to the two-thirds power, or $Si^2$, or the equivalent of the intestinal surface.

We have thus a fundamental formula for approximately expressing a given condition of nutrition. Variations are practically negligible. The inventor first used the symbolical word "Gelidusi" to express nutrition-state, deriving it thus: *Ge*wicht zehnfach *li*near durch Ziehen der dritten Wurzel dividiert *du*rch *Sitz*höhe. He now prefers the word "Pelidisi," deriving it from the Latin, thus: *P*ondus *de*cies *li*nearis *di*visio *sedenti*s altitudo.

The complete formula, applicable to human beings of all ages, is:

$$\textit{Pelidisi}\ (\textit{Gelidusi}) = \frac{\text{cube root of (ten times body weight)}}{\text{sitting height in centimeters}}$$

For adults and well-conditioned nurslings the quotient should closely approximate 100. For growing children it is about 94.5. Variations may range from 81 to 109. Figures above 100 show overfeeding. Figures below 94.5 indicate undernourishment. In the practice of the American Relief Administration, an index of 92 or below indicates supplementary feeding. For rapid use by persons not technically trained, a table is given in the *System of Nutrition*, Volume II, p. 288.

This formula was devised for practical use in emergency feeding. It indicates broad outlines. Every physician knows that undernourishment may depend on a wide variety of causes; that more than one cause may coexist in the same individual, and that many cases cannot be cured merely by supplying food. Diagnosis and indicated treatment are always indispensable. Pirquet himself clearly recognizes this truth and applies an additional formula referring to bodily conditions.

In this formula the nutrition state is indicated by the diagrammatic word "Sacratama," with modifications. It is derived from the Latin words *s*anguinis (quality of blood), *cr*assitudo (condition of the subcutaneous fat), *t*urgor (tension in the skin produced by the water-content) and *m*usculus (muscular development). Intensity of these four qualities is shown by combining the vowels with the above-mentioned letters; *a* stands for normal, *e* for abundant, *i* for excessive, *o* for reduced and *u* for slight. For example, Sacratama indicates a normal condition of the four qualities; Socretemo would indicate pallor, increased fat, increased skin-tension and weak muscles.

Mowatt M. Mitchell, of the American Relief Administration, writes: "As to the Pelidisi System, we have found it eminently satisfactory, chiefly in that it very

largely removes the human element in, and the varying viewpoint taken by, individual examining physicians. We have given it more extensive use naturally in the Austrian operation than anywhere else, and have, in fact, based our entire child-feeding operation in that country on this system of examination, supplemented to a slight degree with . . . the Sacratama System."

The principal theorem of Dr. Pirquet, to which the previous discussion is somewhat preliminary, is elaborated in his Nem system, so-called, from the words *N*ahrungs *E*inheit *M*ilch (nutrition unit milk). By means of this system, Dr. Pirquet, basing it on milk as the unit, has endeavored to construct a nutrition scale which everyone can readily understand.

He mentions difficulties in the practical application of food values expressed by means of the calorie, such as inexactness, confusion between the terms "large" and "small" calorie, failure to discriminate between ingested and utilized calorie values (gross and net calories), and uselessness for the physician, cook and problems of mass feeding.

The calorie system is declared by his associates to belong in the laboratory, but not in life, and to be suitable rather for general theory. Claim is made that the Nem system is easily grasped, just as color is identified by comparison and not by words or symbols; the Nem estimate is derived from the calorie as the metric system is derived from the meridian. However, the superiority of the Nem system is not universally conceded.

The essentials of the system are three, viz., relation to height and weight, statement of the values of the various foodstuffs in terms of milk, and recognition of the bodily demand for protein and vitamines.

Milk is chosen as the unit-substance because it is an ideal union of tissue-building and energy-yielding foods. The unit, or Nem, is 1 gram of mother's milk, a litre of which supplies 667 calories by oxidation in the human tissues. The typical milk contains protein 1.7 per cent, fat 3.7 per cent, sugar 6.7 per cent. Differences between cow's milk and human milk are disregarded in practice. The Nem unit is based on the calorie, as stated above. A net calorie is practically equivalent to 1½ Nem.

The scale is completed metrically:

| | |
|---|---|
| 10 | nem equals 1 dekanem or 1 Dn |
| 100 | nem equals 1 hektonem or 1 Hn |
| 1000 | nem equals 1 kilonem or 1 Kn |
| 1000 | kilonem equals 1 tonnenem or 1 Tn |
| 0.1 | nem equals 1 decinem or 1 dn |
| 0.01 | nem equals 1 centinem or 1 cn |
| 0.001 | nem equals 1 millinem or 1 mn |

*Maximum, minimum, optimum.* The maximum of food per day is taken as the total quantity absorbable in 24 hours by the healthy intestine. It is equivalent to 1 nem per square centimeter of the absorbent intestinal surface. It is thus placed in direct relation with the proportions of the Pelidisi formula (maximum equals $Si^2$ nem or 10 decinem $Si^2$). The minimum is the quantity indispensable for bodily activities during rest. It is equivalent to 0.3 $Si^2$ decinem.

The optimum, or quantity desirable for the individual, has a wide range and cannot be determined absolutely. It depends on variations in height, weight, work performed, state of health and other factors. For an adult not engaged in very hard labor, the optimum will lie between 4 and 6 decinem times $Si^2$. For the reckoning of rations, the range between the infant and the adult engaged in hard labor is divided into 9 classes, the scale giving 10 hektonem for the nursling, intermediate figures for the intermediate classes and 50 hektonem for the hard-working adult. (*Lehrbuch fur Volksernährung,* pp. 164, 166.)

*Protein.* Ten per cent of the total daily demand in nem (not in weight) required by older children and adults is the optimum of the protein need. The minimum is a little lower, the maximum 20 per cent. It should be remembered that 1 gram of protein yields 5.7 calories as

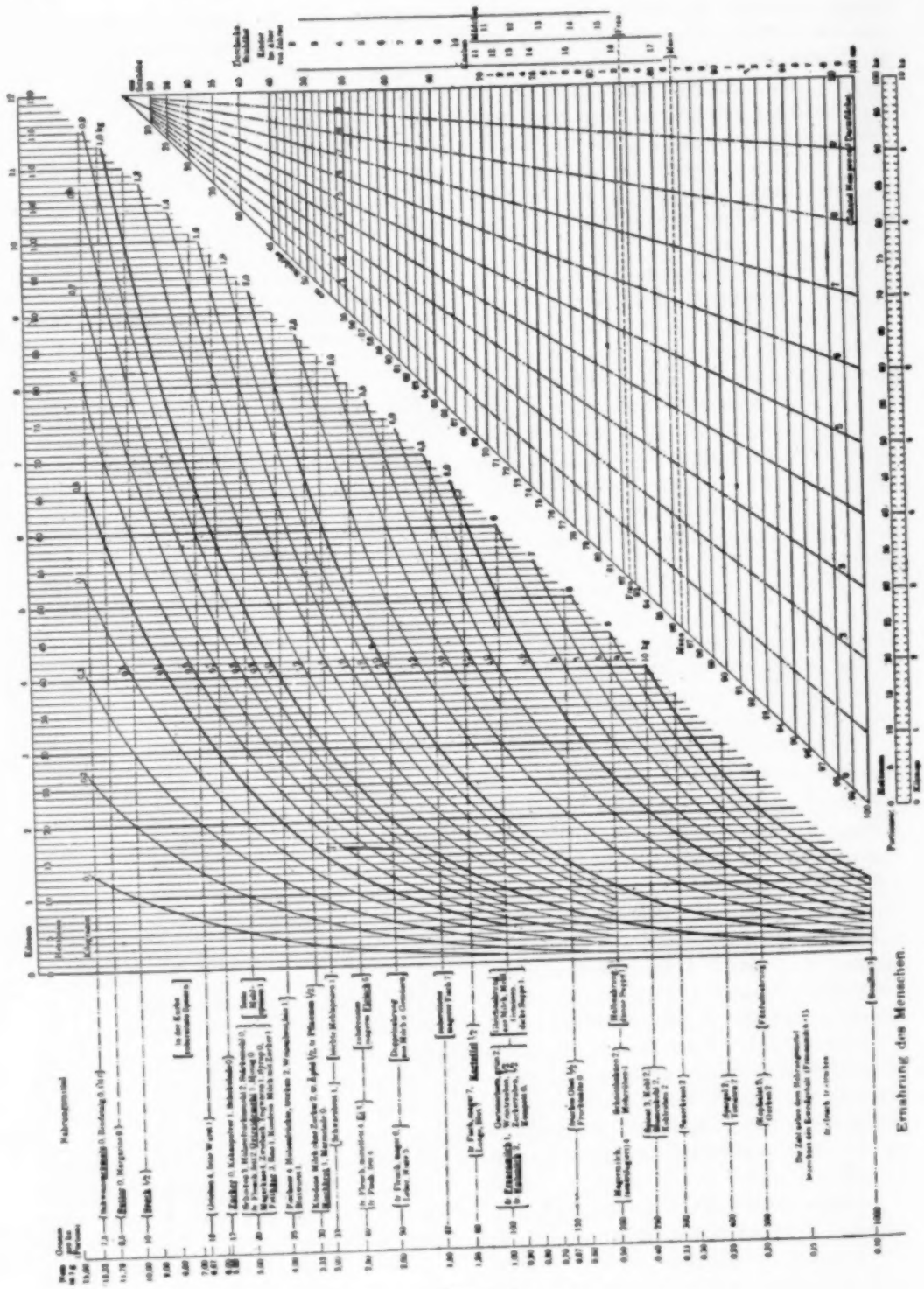


FIGURE 2
PIRQUET'S NUTRITION TABLE
*(From Grundzüge des Nemsystems,* p. 172)

consumed in the calorimeter, and but 4.1 calories as oxidized in the tissues (Rubner).

For rapid application various tables, and other devices have been prepared. (See Figures 1 and 2.) Concerning the Nem system, Mr. Mitchell (*vide supra*) writes that it "has no technical nor scientific value over the calorie system except that in European countries where the metric system is in vogue it is a simple and satisfactory method of calculating rations for mass feeding where a considerable number of various commodities are in use. . . . For use in America an adaptation would, of course, have to be made in the nomenclature . . . since terms hektonem, kilonem, tonnenem, etc., would not apply in a country where the metric system is not in vogue."

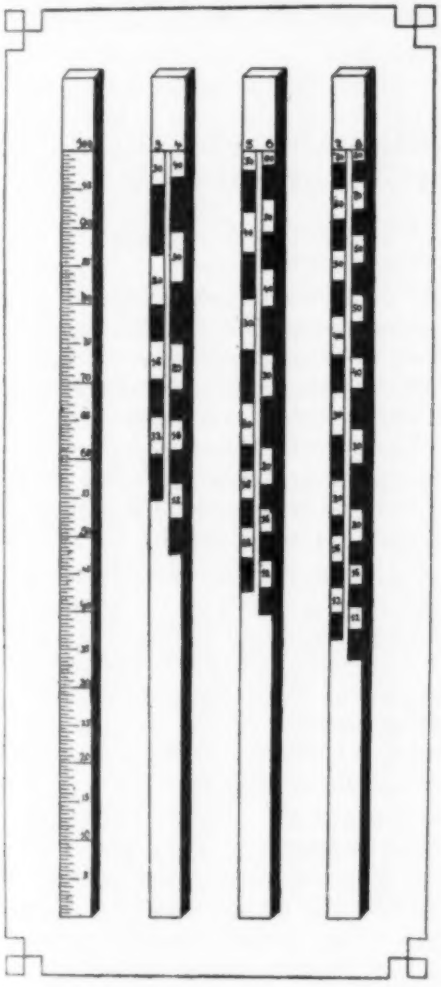

FIGURE 1
PIRQUET'S SCALE
*Front and Side Views*
(*From Grundzüge des Nemsystems*, p. 165)

Natural limitations for the use of this system undoubtedly exist. However, it constitutes an excellent working plan for the handling of large groups, and no better system of the kind has been devised for the extensive food deficiencies of the present critical period. Should the American Relief Administration be called upon to extend its activities to Russia, China, India or any other region suffering from widespread famine, the natural consequence would be employment of this system for speedy relief of the afflicted population. No country can afford to be unaware of the method.

Scope of its application may be shown by practical examples:

1. For the feeding of woodcutters, black bread is the only foodstuff available. How much per day is necessary to sustain each laborer?

2. A man 40 years of age, 90 centimeters sitting height and sedentary occupation, consumes 5 eggs and 2 litres of milk, per day. Is he properly nourished?

3. Four hundred and ninety-five thousand portions of 1 kilonem each must be shipped by rail, consisting as follows:

| | | | |
|---|---|---|---|
| Flour | 400 tonnenem | Bacon | 70 tonnenem |
| Sugar | 15 tonnenem | Apples | 10 tonnenem |

How many freight cars must be provided?

4. During the war the monthly supply of an officers' hospital was:

| | Kilograms | | Kilograms |
|---|---|---|---|
| Bread | 465.5 | Eggs | 12.5 |
| Meat | 405.0 | Cheese | 11.5 |
| Fat | 39.0 | Butter | 3.8 |
| Sugar | 115.0 | Milk | 185.0 |
| Flour | 85.0 | Marmalade | 21.0 |
| Brown sugar | 42.5 | Prunes | 15.0 |
| Beans | 28.0 | Barley | 3.0 |
| Zwieback | 20.0 | Corn meal | 75.0 |
| Potatoes | 318.0 | Fish | 3.0 |

This supply lasted for 939 duty-days. Was it too much or too little?

The solution of problem 1 is appended for illustration:

As optimum, 7 decinem squared are taken, this allowance being fair for laboring adults. The average sitting height of the workmen proves to be 88 cm. On the food rule, and in the column used for 7 decinem squared, 88 cm. corresponds to 54 hektonem (5400 nem). The nemgram table shows that 5400 nem in black bread correspond to 1800 gm.

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# REPORT OF COMMITTEE ON STANDARD METHODS FOR THE BACTERIOLOGICAL EXAMINATION OF SHELLFISH

Presented at the Annual Meetings of the American Public Health Association, New Orleans, October, 1919, and San Francisco, September, 1920, approved by Prof. Frederic P. Gorham, referee, and adopted by the Laboratory Section

## OYSTERS IN THE SHELL

*Collection of Sample.*—At least twelve oysters of the average size of the lot under examination, with deep bowls, short lips and shells tightly closed, shall be selected and prepared for transportation to the laboratory.

As complete a record of such data as it is possible to obtain shall be made, covering the following points: the exact location of the bed from which the samples have been collected, the depth of water over the bed at time of collection, the state of the tide, the direction and velocity of the wind, other weather conditions, the day and hour of removal of stock from the water, the conditions under which the stock has been kept prior to the taking of the sample, provided that the sample was not taken for laboratory testing directly from the water, and the conditions under which sample was kept between time of collection and of examination.

*Transportation of Sample.*—The oysters so selected shall be placed in a cloth bag or other suitable container, which shall be marked for identification. If the oysters are analyzed the same day as collected no icing is necessary. If kept for a longer period, either in transit or in the laboratory before examination, they shall be iced in such a manner as to prevent mixing the ice water with the oysters. At all times they should be kept in as cool a place as is convenient.

*Condition of Sample.*—The analyst shall make a record of the general condition of the oysters before the analysis of the sample, as to whether the shells are open or closed, and as to the presence of any abnormal odors. No oysters from which the shell liquor has escaped shall be used for examination.

*Technical Procedure.*—The bacteriological examination shall be started as soon as possible after the receipt of the sample. The oysters shall be thoroughly cleansed by scrubbing with a stiff brush and clean running water, and dried. The edges of the shell shall be sterilized by passing through a flame or by burning with alcohol. The oysters shall be opened by an oyster knife which has been steril-

ized by flaming. The shell liquor of at least five oysters shall be collected aseptically in a sterile wide-mouth bottle, the oysters being drained until the shell liquor ceases to run away freely.

Five 1 c.c. portions of the composite sample of shell liquor obtained by draining from five to twelve oysters, and five 1 c.c. portions of 0.1 and 0.01 dilutions of the composite liquor shall be placed in fermentation tubes containing standard lactose broth. The water used for dilution purposes shall be either sterile sea water or sterile tap water containing 2 per cent sodium chloride.

The fermentation tubes shall be incubated for two days at 37° C. Upon the formation of gas confirmatory tests shall be made in accordance with the standard methods of water analysis. From the fermentation tubes showing gas transfers shall be made on Endo or litmus lactose agar plates. Characteristic types of B. coli colonies shall then be transferred to a second lactose broth fermentation tube and to a slant agar tube. From the agar slant a microscopic examination shall be made to show the organism in a non-spore forming bacillus.

*Bacterial Counts.*—It is recommended that the determination of the total number of bacteria present in the shell liquor be discontinued.

### OYSTERS REMOVED FROM THE SHELL (OPENED OR SHUCKED STOCK)

*Collection of Sample.*—The stock in the container from which the sample is to be taken shall be thoroughly mixed by shaking and stirring, and at least one-half pint of the sample placed in a sterile wide-mouthed jar by means of a ladle or other implement sterilized by flaming, alcohol being usually the most convenient material for use in the field. The jar shall then be tightly stoppered.

*Transportation of Sample.*—When the time between collection of the sample and its examination shall exceed three hours, or if the outside temperature is above 50° F., the sample shall be kept cool by means of ice placed around, but not in the sample jar.

*Technical Procedure.* — Two hundred c.c. of sterile 2 per cent salt solution shall be placed in a sterile container and oyster meats added sufficient to bring the water level up to the 400 c.c. graduation mark on the container. A stoppered Erlenmeyer flask, glass jar, or other container which can be easily sterilized, and on which the graduation may be plainly marked, may be used.

The contents of the container shall be thoroughly shaken and the watery fluid used for the determination of B. coli as detailed for the examination of the shell liquor of oysters in the shell.

As the oyster meats are diluted with an equal quantity of saline solution the result shall be multiplied by two for a score.

### EXPRESSION OF RESULTS—SHELL AND SHUCKED STOCK

The results of the bacteriological examination for B. coli shall be expressed by the following arbitrary numerical system, known as the AMERICAN PUBLIC HEALTH ASSOCIATION Method of Scoring Oysters.

If desired, the higher dilutions may be run for shucked oysters and for shell stock. In this case a 0.001 dilution has a positive value of 1,000 and a 0.0001 dilution of 10,000, and so on.

The presence of B. coli in each fermentation tube, if confirmed, is to be given the following values, which represent the reciprocals of the greatest dilutions in which the test for B. coli is positive:

If present in 1.0 c.c. but not in 0.1 c.c., the value of 1.

If present in 0.1 c.c. but not in 0.01 c.c., the value of 10.

If present in 0.01 c.c. the value of 100.

The addition of these values for the five fermentation tubes gives the total value for the sample and this figure is the score, the tube representing the great-

est dilution for each set being counted.

The results are expressed in the following tabular form:

RESULTS OF TESTS FOR B. COLI IN DILUTIONS INDICATED:

| Fermentation Tubes | 1.0 c.c. | 0.1 c.c. | 0.01 c.c. | Numerical Value |
|---|---|---|---|---|
| 1 | * | * | 0 | 10 |
| 2 | * | * | 0 | 10 |
| 3 | * | 0 | 0 | 1 |
| 4 | * | 0 | 0 | 1 |
| 5 | * | 0 | 0 | 1 |
| | | | Score: | 23 |

*=positive, confirmed B. Coli in fermentation tube.
0=negative, B. Coli absent.

Sometimes results similar to the following are obtained; that is, one or more tubes may show positive results in small quantities of shell water while other tubes may show negative results in larger quantities. In this case a recession of values is made and the next lower numerical value is given to the positive result in the high dilution and such positive result is considered as being transferred to a lower dilution giving a negative result in another set of tubes.

As examples of the method of obtaining the score, the following tables are given:

RESULTS OF B. COLI TESTS IN DILUTIONS INDICATED:

| Tubes | 1.0 c.c. | 0.1 c.c. | 0.01 c.c. | Value |
|---|---|---|---|---|
| 1 | * | * | 0 | 10 |
| 2 | * | * | 0 | 10 |
| 3 | * | * | 0 | 10 |
| 4 | * | 0 | 0 | 10 |
| 5 | * | * | * | 10 |
| | | | Score: | 50 |

| Tubes | 1.0 c.c. | 0.1 c.c. | 0.01 c.c. | Value |
|---|---|---|---|---|
| 1 | * | * | 0 | 10 |
| 2 | * | * | 0 | 10 |
| 3 | * | * | * | 100 |
| 4 | * | * | * | 10 |
| 5 | * | 0 | 0 | 10 |
| | | | Score: | 140 |

Respectfully submitted,

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# REPORT OF COMMITTEE ON REGISTRATION AFFAIRS

Read before the Vital Statistics Section of the American Public Health Association, at the Fiftieth Annual Meeting, New York City, November 17, 1921, and adopted by vote of the Section.

## DEATH REGISTRATION

The death registration area now includes 34 states, the District of Columbia, the Territory of Hawaii, and 17 cities in non-registration states, and relates to 82.3 per cent of the population of the United States.

The additions to this area since the last report are Delaware and Nebraska, and the city of Fort Worth, Texas.

The only states without adequate registration laws are Arizona, Nevada, and South Dakota, the Model Law having been enacted in Iowa and West Virginia.

## BIRTH REGISTRATION

The birth registration area now includes 27 states and the District of Columbia, representing 65.3 per cent of the total population of the United States.

The additions to this area since the last report are Delaware, Mississippi, Nebraska, New Jersey, and Oregon.

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# MILK INSPECTION*

*(Chapter from the Forthcoming Report of the Committee on Municipal Health Department Practice)*

SOME measure of control of the sanitary quality of the milk supply is exercised by all American cities of 100,000 population and over, but it is surprising to find that pasteurization is not yet general except in the larger cities, and that only 31 out of 83 cities studied have a grading system. Systematic supervision, as we might expect, is most highly developed in the larger cities which reach out over a larger area for their supply.

To provide a safe milk supply is a public-health problem which concerns almost every home. New York estimates that it consumes over 4,000,000 pints of milk daily, a per capita consumption of over 0.71 pints; while the average per capita consumption in 1920 for 68 of the cities under study was 0.66 pints per day.

## ORGANIZATION

In 35 cities milk control is under the division of foods; in 8 under a separate division of milk and dairies; in 4 under a division of milk and meats; in one city, Minneapolis, under a bureau of public health inspection, and in the other 35 cities the work is handled by the health officer himself or by a subordinate directly responsible to him. In Denver, Colo., milk inspection is carried on by city and county administration in coöperation.

## PERSONNEL

Practically all of the larger cities employ both veterinarians and inspectors for this work, but in the cities of under 250,000 population, where milk inspection is not so complete, less than half employ both veterinarians and inspectors, either on part- or whole-time basis. Forty-five cities employ veterinarians and inspectors; 4 employ veterinarians only, and 29 inspectors only. For five cities there was no statement.

In the first group, Pittsburgh, and in the second, Newark, Kansas City, Mo., and Jersey City, are the only cities not employing veterinarians for milk inspection (we have no statement for Rochester), while in the third group about half the departments (29) upon which we have data report veterinarians on their inspection staff. In 12 cases, Cleveland and Minneapolis of the larger cities, and Akron, San Antonio, Dayton, Paterson, Nashville, Jacksonville, Norfolk, Salt Lake City, Savannah, Tacoma and Schenectady of the smaller cities, veterinarians are reported as part-time employees. In some instances, notably San Antonio and Dayton, they give a part of their time to the milk inspection work and the rest to some other form of inspection, such as that of meat, in which case they are, of course, whole-time employees of the cities.

The usual number of veterinarians employed by any city is one or two, although Columbus reports six and Washington, D. C., seven; the average number for the entire 78 cities reporting is 1.0. About one-fourth of these are part-time employees. We find that, per capita, the smaller cities are better provided with veterinarians than the larger ones, as shown in the following table:

From Table I it will be observed that while the largest cities have the greatest number of inspectors (New York employs 29, Chicago 28, Baltimore 21), on a population basis this is not the case, nor do the groups vary directly in this regard. Milk inspectors are employed in all but 4 of the 78 cities for which we have complete data on this subject and in these 4 cities, Akron, Reading, Canton, and San

*Prepared by Mr. Ira V. Hiscock, Department of Public Health, Yale University, New Haven, Conn.

TABLE I

CLASSIFICATION OF MILK INSPECTION PERSONNEL BY CITIES OF DIFFERENT POPULATION GROUPS, 1920

| CITIES | No. of Cities | VETERINARIANS | | INSPECTORS | |
|---|---|---|---|---|---|
| | | No. | Per 100,000 Population | No. | Per 100,000 Population |
| All cities | 78 | 79 | .28 | 353 | 1.25 |
| 500,000 and over | 12 | 16[1] | .10 | 168[4] | 1.03 |
| 250,000 to 500,000 | 12 | 19[2] | .44 | 75[5] | 1.76 |
| Under 250,000 | 54 | 44[3] | .58 | 110[6] | 1.47 |

[1] 2 part time
[2] 1 part time
[3] 16 part time
[4] 4 part time
[5] 11 part time
[6] 12 part time

Diego, all of which are in the third group, the health officer, assisted by one veterinarian, attends to the inspection of milk. Practically all milk inspectors are on full time.

Clerical assistance outside of that furnished by the administrative division is supplied to milk inspectors in the larger cities only.

EXPENDITURES

It has been difficult to ascertain the expenditures for milk control since in many instances this work is carried on under some other division, such as that of foods or laboratories, and the financial data are not separable. Only 4 cities of the first group, Detroit, Cleveland, Los Angeles and San Francisco, one city of the second group, Washington, and 21 cities of the third group, had complete data on this subject. We find that for these 26 cities Columbus, Ohio, spends the largest amount with $0.131 per capita, and Wilmington, Del., the least, with $0.014 per capita, the average for the entire group being $.044.

FIELD CONTROL

*Producing Farms*

The extent of the problem of supervision at the source is illustrated by the fact that 54 cities average 621 farms per 100,000 population supplied. A study of Table II indicates that health departments made an average of 1.3 inspections of these farms annually, the figure for the larger cities being a trifle higher than this average. This table also shows that only about four-fifths of the farms inspected are scored. In many cases it is difficult to say how extensively producing farms are inspected. In Philadelphia, for instance, only six farms within the city limits are inspected, while many cities demand that all their producing farms within the state be inspected by city officials.

Detroit, Houston, Columbus, Indianapolis, and Scranton plan to make semiannual inspections, while in 7 cities of the first group, 7 cities of the second group, and 20 cities of the third group, the inspections are supposed to be more frequent, and in 13 cities one inspection a month is the ideal. Actually, as indicated in Table II, inspections are made about once a year on the average.

Sixty-three cities out of 80 reporting state that their producing farms are scored, while it will be noted from the above table that 43 out of this group of 54 cities report such a procedure.

With few exceptions the score card of the United States Department of Agriculture is used. Baltimore, Pittsburgh, Washington, Jersey City and the cities of New York state use a modified score card. Fall River uses one made out by the health officer. Omaha and New Haven use a special form, and Youngstown uses the Ohio State University score card.

TABLE II

HEALTH DEPARTMENT SUPERVISION OF MILK INSPECTION AT PRODUCING FARM, 1920

| CITIES | No. of Cities | No. Farms Per 100,000 Population | No. Annual Inspections Per 100,000 Population | Inspections Per Farm Per Year | No. Cities Scoring Farms |
|---|---|---|---|---|---|
| All cities | 54 | 621 | 854 | 1.3 | 43 |
| 500,000 and over | 7 | 638 | 933 | 1.4 | 7 |
| 250,000 to 500,000 | 8 | 473 | 693 | 1.4 | 7 |
| Under 250,000 | 39 | 673 | 835 | 1.2 | 29 |

As to the average dairy score for the year, our information is very meagre; in the first group it ranges from 52 to 76, and for the rest of the cities it does not differ greatly from these figures. Producing farm scores are not published in any of the larger cities except Washington, where they appear in the health department pamphlet. In the smaller cities it is a more common practice to publish or post the scores, and in Oakland, San Antonio, Salt Lake City, Kansas City, Kan., Duluth, and Oklahoma City, they are printed in the newspapers monthly or quarterly, while in Providence, Richmond, New Haven, Dayton, and Norfolk, they are published monthly or quarterly in the health department bulletin or in the annual report. In Elizabeth, they are posted monthly and in Oakland they appear both in the newspaper and the health department publication.

### MILK DEPOTS

The average number of milk depots per 100,000 population for the 50 cities reporting on this question is 14.2, the cities of 250,000 to 500,000 population having the lowest relative number in this regard. Table III shows the average number of milk depots and inspections per 100,000 population, as well as the number of cities in which milk depots are scored. In some places loading platforms and stores are considered as milk depots, but for the purpose of this survey we have considered as milk depots only those places where milk is handled for distribution on a large scale, such as pasteurizing plants, etc. The classes of milk depots in Chicago, for example, are: 1. Plants in which pasteurization alone is carried on. 2. Plants bottling the milk. The milk is received, taken to a pasteurization plant and then returned to the station and bottled. 3. Plants in which the milk is received, pasteurized and bottled in one place.

The frequency of inspections varies greatly. In the larger cities inspections are made at least weekly. In Baltimore they are made four times a week, and in Los Angeles and Boston, daily. For the second group of cities the procedure varies from daily to once a year. Only 15 of the smaller cities inspect weekly or

TABLE III

HEALTH DEPARTMENT SUPERVISION OF MILK DEPOTS IN CITIES OF THE UNITED STATES, 1920

| CITIES | No. Cities | No. Milk Depots per 100,000 Population | No. Inspections per 100,000 Population | No. Inspections per Milk Depot | No. Cities Scoring |
|---|---|---|---|---|---|
| All cities | 50 | 14.2 | 519 | 36 | 32 |
| 500,000 and over | 6 | 14.8 | 572 | 38 | 5 |
| 250,000 to 500,000 | 5 | 6.8 | 279 | 41 | 3 |
| Under 250,000 | 39 | 15.9 | 532 | 33 | 24 |

oftener, the majority reporting monthly or semi-annual inspections.

The re-sale of condemned milk is prevented in various ways; in Detroit, rennet is added, in several other cities some form of coloring matter is put into the milk. Still other cities tag the cans "condemned" and send them back to the shipper, while the rest simply dump the condemned milk.

### TEMPERATURE REQUIREMENTS

Some rules in regard to temperature are in force in practically all the cities studied, and 55 of the cities have regulations of this type covering farms, transit, milk depots and delivery. As indicated in Table IV, milk depot standards are most severe (in 65 per cent of the cities 50° F. and under); next delivery standards (60 per cent 50° F. and under); then transit standards (52 per cent 50° F. and under); while on the farms only 51 per cent of the cities require a temperature of 50° F. and below. The regulations of the larger cities are naturally more rigorous than is the case for the cities of the two groups under 500,000 population; doubtless because the milk must be brought from a greater distance than in the smaller cities. This situation is shown in Table IV, which indicates that 90 per cent of the large cities require a temperature of 50° F. or less at milk depots, as contrasted with 66 per cent of the cities of the second group and 58 per cent of those in the third group.

Chicago, and some of the California cities have a standard at the milk depots of 45° F., or even lower in the case of Los Angeles. Philadelphia, Milwaukee, Newark, Portland and a few of the cities in the third group allow a temperature of 60° F. or even higher. At the farms and in transit the requirements are even more lenient. Philadelphia, Detroit, Baltimore, Pittsburgh, and Los Angeles of the first group, and Milwaukee, Seattle, Portland, and Denver of the second group, and Memphis, Grand Rapids, Salt Lake City, Reading, Kansas City, Kan., and Tacoma of the third group allow a temperature in transit of 60° F., while Toledo, Columbus, Oakland, Akron, Youngstown, and Fort Worth (all cities of 250,000 or under) allow a temperature as high as 65° F. San Antonio, Oklahoma City, Canton, and San Diego allow a temperature of 70° F., while seven cities, Washington, New Orleans, Indianapolis, Providence, Nashville, Camden, and Wilmington, report no requirements.

### MEDICAL CONTROL

Only 17 of the cities under consideration require a physical examination of persons handling milk. Detroit is the only city of the first group which makes a routine examination of all milk handlers. The usual procedure for these cities consists in having the persons who handle certain grades of milk undergo an examination. New York, for example, requires physical examinations for handlers of Grade A raw and pasteurized milk. In St. Louis all employees of dairymen selling their own milk are examined, as are all those selling Grade A and certi-

TABLE IV

TEMPERATURE REQUIREMENTS (FAHRENHEIT) FOR DIFFERENT GROUPS OF CITIES, 1920

| CITIES | No. of Cities | At Farms | | | In Transit | | | At Milk Depots | | | On Delivery | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 45° and under | 50° | 55° and over | 45° and under | 50° | 55° and over | 45° and under | 50° | 55° and over | 45° and under | 50° | 55° and over |
| All cities | 55 | 1 | 27 | 27 | 0 | 29 | 26 | 2 | 34 | 19 | 0 | 33 | 22 |
| 500,000 and over | 10 | 1 | 5 | 4 | 0 | 6 | 4 | 2 | 7 | 1 | 0 | 8 | 2 |
| 250,000 to 500,000 | 6 | 0 | 2 | 4 | 0 | 2 | 4 | 0 | 4 | 2 | 0 | 3 | 3 |
| Under 250,000 | 39 | 0 | 20 | 19 | 0 | 21 | 18 | 0 | 23 | 16 | 0 | 22 | 17 |

fied milk in Cleveland. In Philadelphia and the other Pennsylvania cities there is a regulation requiring that food handlers when in the city shall be examined physically twice a year and present certificates of health. In San Antonio a physical examination of all handlers every six months extends to all producing farms, and all employees must have health cards. Dayton requires examinations of all milk handlers except individual producers.

There is even less uniformity in the practice concerning employees in the pasteurization plants. In St. Paul, Syracuse, Hartford, Lowell, and Duluth all persons employed in pasteurization plants undergo an examination; while in Indianapolis all milk handlers except the group employed in pasteurization plants are examined.

Briefly, a fairly complete physical examination of milk handlers is said to be required in 6 of the larger cities: New York, Detroit, Cleveland, St. Louis, Boston, and Baltimore, 1 city of the second group, Indianapolis, and 10 of the cities under 250,000 population, St. Paul, Syracuse, Richmond, Dayton, San Antonio, Hartford, Albany, Lowell, Duluth, and Flint. In Cleveland, Columbus, Nashville, and Schenectady an examination of the suspicious cases only is required.

A routine attempt to detect disease carriers is made in only 24 of the cities studied. In 6 of the first group, New York, Chicago, Philadelphia, Detroit, Cleveland, and Buffalo, 2 of the second group, Washington and Cincinnati, and 16 of the third group (Toledo, Columbus, Birmingham, Syracuse, New Haven, Memphis, Bridgeport, Hartford, Springfield, Nashville, Norfolk, Albany, Spokane, Elizabeth, Utica, and Schnectady), there is routine machinery for detecting and excluding these cases. Emergency work, for instance, when there is an epidemic, is carried on in 20 cities, 3 of the first group, Boston, Baltimore, and Pittsburgh, 6 of the second group, New Orleans, Minneapolis, Indianapolis, Jersey City, Rochester, and Denver, and 11 of

TABLE V

LABORATORY CONTROL OF MILK SUPPLIES IN DIFFERENT GROUPS OF CITIES, 1920

| CITIES | No. of Cities Reporting | FREQUENCY OF COLLECTION | | | | | | | | | | Average Monthly Samples per 100,000 Population |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | At Farms | | | In Transit | | | At Milk Depots | | | On Delivery Wagons | | | |
| | | Monthly | Less Often | None | Monthly | Less Often | None | Weekly or Oftener | Less Often | None | Weekly or Oftener | Less Often | None | |
| All cities | 74 | 8 | 28 | 38 | 16 | 11 | 47 | 22 | 39 | 13 | 23 | 46 | 5 | 137[4] |
| 500,000 and over | 11 | 1 | 2 | 8 | 3 | 2 | 6 | 3 | 7 | 1 | 5 | 6 | 0 | 135[1] |
| 250,000 to 500,000 | 12 | 1 | 8 | 3 | 1 | 6 | 5 | 5 | 7 | 0 | 4 | 7 | 1 | 144[2] |
| Under 250,000 | 51 | 6 | 18 | 27 | 12 | 3 | 36 | 14 | 25 | 12 | 14 | 33 | 4 | 139[3] |

[1] 10 cities [2] 11 cities [3] 51 cities [4] 72 cities

the third group, Providence, Louisville, Akron, Omaha, Dayton, Scranton, Paterson, Fall River, Salt Lake City, Lowell, Yonkers, and Tacoma.

The machinery for the detection and reporting of cases of communicable disease on the dairy farm seems to depend very largely on the interest of the dairymen themselves, and the coöperation of private physicians and county and state officials. In the large cities, New York for example, the dairymen report directly to the health department, or if a physician be in attendance his report may go directly to the health officer or to the state and then to the local health department. Many of the larger cities are like Chicago, where the county health officer's report is sent to the city health department for guidance in case of communicable disease on a dairy farm.

### LABORATORY CONTROL

Laboratory examinations are usually made at the city laboratory by the city bacteriologist or chemist. Table V indicates the frequency of collection and samples collected in the different groups of cities. In all three groups of cities we note that samples are most frequently collected at the milk depots and on delivery wagons and less frequently on farms and in transit. In the first group, only 3 cities, Chicago, Detroit and Philadelphia, collect samples at farms at all; while in transit, weekly collections are made in San Francisco, once a month in Philadelphia, twice a month in Chicago and irregularly or not at all in the other cities. At milk depots, collections are made more frequently, daily in Baltimore and Los Angeles, weekly in San Francisco, and irregularly (monthly or less) in the other cases. On the delivery wagons they are made daily in Philadelphia, Detroit and Baltimore, weekly in Chicago and San Francisco and less often in the other cities.

Among the cities of the second group, collections at the farms and in transit are made irregularly, generally not over twice a year except in the case of New Orleans, which reports daily collections in transit. At milk depots collections are made daily in Washington and New Orleans, weekly in Milwaukee and Kansas City, Mo., and in the other cities not over twice a month. The average is about the same for delivery wagon collections, i. e., daily in 3 cities, Washington, New Orleans, and Minneapolis, weekly in Milwaukee, twice a month in Rochester and Kansas City, Mo., and in the others irregularly or not at all.

For the cities of the third group, collections at the farms are made irregularly or not at all, with the exception of Oakland, Bridgeport, Yonkers, Tacoma, Somerville, and San Diego, where they are made once a month. In transit they are made three times a week in Providence, weekly in Schenectady and Syracuse, and monthly in 9 other cities. Samples are collected from milk depots daily in Dallas, Elizabeth and San Diego, and weekly in 11 of the other cities. On the delivery wagons collections are made daily in Elizabeth only, weekly in 13 other cities and monthly in 18 cities.

Bacteriological standards for the different cities are discussed under the subject of milk grades.

The chemical standards are usually those prescribed by the state. In about half (41) of the cities the requirements for solids are 12 per cent, the remaining cities varying slightly on either side of this figure. In 30 cities the requirements for solids not fat are 8.5 per cent, and 36 have a standard somewhat higher than this, even reaching 9.5 per cent in Duluth. On the standard for fat, the cities are about equally divided between 3 per cent (in 24 cities), 3.25 per cent (in 20 cities), and 3.50 per cent (in 20 cities), with the number reaching as high as 3.9 per cent in Denver. The water requirement is 88 per cent in 45 of the cities reporting, and in the rest this fig-

ure varies according to the requirements for the other constituents.

TUBERCULIN TESTING

In 39 cities, tuberculin testing is required of all herds from which raw milk is sold. In 14 additional cities this requirement applies to Grade A raw milk or its equivalent, and in 7 others to certified milk. In the larger cities, particularly, dealers in raw milk are required to have their herds tuberculin tested, and in 7 (58 per cent) of the first group, 10 (76 per cent) of the second and 25 (59 per cent) of the third group under observation this measure is apparently enforced. In some instances, notably Buffalo, Cincinnati, New Orleans and several of the smaller cities, tuberculin testing is required of cows producing certified milk only, but it is interesting to note that in Buffalo and Cincinnati over 98 per cent, and in the majority of the smaller cities where this is true over 90 per cent of the total supply is pasteurized. In a number of cases tuberculin testing is required, but not enforced; but the annual number of cattle which are placed under this test cannot be used as a check on the amount of work done, since in many of the northern states all cattle coming into the state must be tested before they can be admitted, and the local officials seldom have these figures.

Tuberculin testing may be carried on either by the state, or by private or local veterinarians, or by both. Three cities of the first group, Philadelphia, Los Angeles, and San Francisco; Milwaukee of the second group, and Toledo, Oakland, Omaha, Dayton, New Haven, Hartford, Paterson, Youngstown, Des Moines, Wilmington, Yonkers, Jacksonville, Utica, and Canton of the third group, depend upon state veterinarians. A greater number, 7 in the first, 11 in the second, and 31 in the third group, employ private veterinarians for this work. In 14 of these cities the veterinarians work in connection with the state or federal officials, while in 8, Seattle, Cincinnati, Cleveland, Pittsburgh, Portland, Memphis, San Antonio, and Dallas, the health department employs its own veterinarians for this work.

We have only a rough estimate of the proportion of cows that are annually tested, but for most of the cities the number would probably not exceed 10 per cent. We find that 100 per cent of the herds for which tuberculin testing is required are reported tested in Washington, in Texas cities, and in 8 others of this third group, Columbus, Memphis, Savannah, Schenectady, Oklahoma City, Jacksonville, Norfolk, and Nashville. In Kansas City, Mo., St. Paul, Houston, Kansas City, Kan., Duluth, Spokane, and San Diego 90 per cent or more of the cattle are reported tested.

The procedure employed in 54 cities is to slaughter the reacting cows, but in a few cases, notably Minneapolis, Oakland, San Antonio, and Norfolk, they are removed from the herd. In Washington the cows are either immediately killed or removed from the farm; in Minneapolis the premises must be disinfected, and in Camden the farmer himself is responsible for removing a reacting cow. In New York and Albany the reacting animals are slaughtered or maintained on the Bang system through New York state authority. In Los Angeles the cattle are tatooed and used only in dairies pasteurizing their milk; in Flint the reactors are tagged, and in Dallas they are isolated.

Usually the owners of reacting animals receive some compensation either from the state or from the city. In more than half the cities, 6 in the first group, 6 in the second, and 35 in the third, this is provided by law, and the compensation varies according to the kind or value of the animals. The price usually paid for a registered cow is about $300.00 and for grades from $25 to $100.00, while in some cases a certain percentage of the valuation, say from 30 to 60 per cent, is allowed. Where tuberculin testing is not required there is usually no compensa-

tion provided, although the state may pay for the condemned animal, as in Hartford and Des Moines. When tests are made under the Accredited Herd Plan, both federal and state governments compensate the farmers on a varying scale. The reactors are slaughtered and sold for beef in Cincinnati, New Orleans, Nashville, and Canton, unless the meat is condemned for such use.

### PASTEURIZATION

In at least 10 of the 12 larger cities under observation all milk except that from tuberculin-tested cattle must be pasteurized. As nearly as can be ascertained, about 95 per cent of the milk supply of these cities is thus treated. The individual reports show that 9 out of the 12 cities of this group pasteurize 95 per cent or more of their total milk supply.

Of the second group, 8 cities, Washington, New Orleans, Minneapolis, Kansas City, Mo., Indianapolis, Rochester, Portland and Denver, do not require pasteurization, and only 5, Milwaukee, Newark, Cincinnati, Jersey City and Seattle, require this treatment for all milk not from tuberculin-tested cattle.

Of the cities of the third group pasteurization is required in less than half (23) and only about 9 per cent of the cities pasteurize 95 per cent or more of their total milk supply. In the individual cities the amounts pasteurized range from 17 per cent to 99 per cent, while 8 cities, Columbus, Oakland, Akron, Omaha, Wilmington, Tacoma, Canton, and San Diego, require the pasteurization of all milk not from tuberculin-tested herds.

Repasteurization is permitted in only 29 cities, 4 of them in the second group and 25 in the third group. The cities of over 500,000 population and those in the states of California, Indiana, Nebraska, New Jersey, Ohio, Washington and Wisconsin are most particular in this regard.

Inspection of plants is the usual form of supervision, and in 12 cities pasteurization plants are inspected weekly or oftener; temperature charts are used for control of pasteurization in 16 cities.

The holding system is required in all but 20 cities studied, a temperature of 145° F. for thirty minutes being most common. A few cities allow a minimum of 142° F. and a maximum of 145° F. or even 147° F., as in Detroit and Buffalo. If the maximum temperature is high, a few cities allow from 20 to 25 minutes for the period of holding.

Recording thermometers are required in 65 cities. The cities not so included are Pittsburgh, Washington, New Orleans, Denver, Providence, Louisville, Akron, Paterson, Youngstown, Des Moines, New Bedford, Nashville, Camden, Wilmington, Cambridge, Albany, Flint, and Savannah.

### MILK GRADES

Although 31 of the 83 cities under observation report that their milk supply is graded, there is little uniformity as to requirements and types of grading. Forty-five cities report the sale of certified milk, for which the bacterial count must not exceed 10,000 per c.c.

Grade A Raw, for which the bacterial count must not exceed 60,000 per c.c., is found principally in the cities of New York State, and in Louisville and Birmingham. Bacterial counts for Grade A Raw in Detroit must not exceed 40,000 per c.c.; in Cleveland, Baltimore, Oakland and Richmond, 50,000; while Los Angeles, Newark, Kansas City, Mo., Bridgeport, Memphis, Kansas City, Kan., Norfolk, Seattle, and Milwaukee allow a bacterial count of 100,000 per c.c. Los Angeles has a grade of "Guaranteed Raw" which allows only 25,000 bacteria per c.c., while Jacksonville has a still higher grade called "Baby Milk," which includes milk of a bacterial count under 15,000 per c.c.

The bacterial count for Grade A Pasteurized in Baltimore, Newark, Louisville, Albany, Yonkers, Schenectady, Utica, and Rochester must not exceed

TABLE VII—SUPERVISION OF MILK SUPPLIES IN EIGHTY-THREE CITIES, 1920

30,000 per c.c., while in Los Angeles, Kansas City, Kan., Oakland, Birmingham, Richmond, Paterson, and Norfolk the requirements are even more stringent, reaching 5,000 in Richmond.

Only a few of the cities have a Grade B milk, and practically none have a Grade C. To meet the requirements for Grade B Raw in the cities of New York State, Louisville, and St. Paul, the bacterial count must not exceed 200,000 per c.c. The "commercial milk" of Jacksonville has this same requirement. Grade B Pasteurized has a standard of 100,000 per c.c. in the cities of New York State, Detroit, Louisville, Bridgeport, Kansas City, Mo., and Somerville, while the requirements for the second grade of pasteurized milk in Philadelphia, Los Angeles, Newark, Kansas City, Kan., St. Paul, Birmingham, Grand Rapids, Norfolk, Paterson, and Jacksonville allow a maximum count of only 50,000 per c.c. A number of cities have special regulations which limit the bacterial count before and after pasteurization, and a few change the standard during the summer weather, as in Chicago, where from October 1 to May 1 the requirement is 50,000 per c.c. or under, and from May 2 to September 30, it is 100,000 per c.c. or under. Our data are incomplete on this subject.

The only cities for which we have any information as to Grade C milk are New York and Albany, which allow 500,000 bacteria per c.c. for raw and 300,000 for pasteurized; Bridgeport, where Grade C milk must be boiled two minutes; and Salt Lake City, which allows 250,000 per c.c.

In San Francisco the milk is not graded, but the whole supply is reported pasteurized. Youngstown is the only city which reports grading by a sediment test alone. In several cities, as those in New York State, regulations either state or local require appropriate tags or labels for the containers of the various grades of milk sold.

### LICENSES

In practically all the cities under observation milk dealers are licensed, but in less than half (31 out of 75 reporting) is a license demanded of the milk farm. Only two of the larger cities, Philadelphia and Baltimore, license farms, but dealers are licensed in every one of the 10 reporting cities of this group. Licenses were revoked in 5 of the cities. In the second, as in the first group of cities, all the dealers are licensed, while all but 4, Milwaukee, Minneapolis, Indianapolis, and Rochester, license the farms also. Portland and Newark give no statement. Cincinnati is the only city which reports having revoked licenses to any extent.

Twenty-two cities of the third group have licenses for farms, and all but 3, Youngstown, Jacksonville, and Savannah, license the milk dealers. Licenses have been revoked in 17 of these cities. Thirteen cities in all furnish no data as to the number of licenses revoked in 1920.

### PROSECUTIONS

Prosecutions are usually conducted by the city attorney on complaint of the health department. In some instances the health department simply acts to withdraw the permit to sell milk. Several cities handle this question through the health department entirely, withdrawing the license or permit in preference to making a definite fine. This procedure is especially true of the smaller cities. For the first group of cities we find from 5 to 204 prosecutions, with from 5 to 179 convictions. The prosecutions in the second group range from 1 to 5,738, with a similar range of convictions. From 1 to 125 prosecutions are reported by cities of the third group, with from 1 to 75 convictions.

### MILK COMMISSIONS

Eleven cities of the first group, 9 cities of the second group and 26 cities

TABLE VII—SUPERVISION OF MILK SUPPLIES IN EIGHTY-THREE CITIES, 1920

# TABLE VII—SUPERVISION OF MILK SUPPLIES IN EIGHTY-THREE CITIES, 1920

| | CITIES | ORGANIZATION | | | | | FIELD CONTROL | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Producing Farms | | | | | | |
| | | | Personnel | | Expenditures | | | Inspections | | | Scoring | | |
| | | Conducted by Division of | Veterinarians | Inspectors | Total | Per Capita | Number | No. | Per 1000 Pop'n | Frequency | Are They Scored | Score Card Used | |
| | **Cities of over 500,000 Population.** | | | | | | | | | | | | |
| 1 | Baltimore, Md. | Chemistry & Food | 1 | 21 | 24500S | ..... | 3800 | 6944 | 9.4 | 4 yearly | No | Mod | 1 |
| 2 | Boston, Mass. | Food | 1 | 8 | N.S. | ..... | 30000 | N.S. | ..... | Constantly | Yes | Gov. | 2 |
| 3 | Buffalo, N. Y. | Food | 1 | 17 | N.S. | ..... | 2700 to 2800 | N.S. | ..... | 1-4 yrly. | Yes | Mod. | 3 |
| 4 | Chicago, Ill. | Food | 2 | 28 | N.S. | ..... | 18000 | 7698 | 2.8 | Irregular | Yes | Gov. | 4 |
| 5 | Cleveland, Ohio | Food & Dairy | 2P | 11 | 27275 | 0.034 | 4656 | 5957 | 7.4 | Yearly | Yes | Gov. | 5 |
| 6 | Detroit, Mich. | Dairy & Food | 2 | 12 | 33360 | 0.033 | 8000 | 7826 | 7.8 | 2 yearly | Yes | Gov. | 6 |
| 7 | Los Angeles, Cal. | Food | 1 | 9 | 20889 | 0.036 | 1400 | 10486 | 18.1 | 12 yearly | Yes | Gov. | 7 |
| 8 | New York, N. Y. | Food & Drugs | 1 | 29 | N.S. | ..... | 40000to50000 | N.S. | ..... | 4 yearly | Yes | N.Y.C | 8 |
| 9 | Philadelphia, Pa. | Milk | 1 | 16 | N.S. | ..... | 12000 | N.S. | ..... | N.S. | Yes | Gov. | 9 |
| 10 | Pittsburgh, Pa. | Food & Drugs | ..... | 10 | N.S. | ..... | 8000 | 24000 | 40.8 | 4 yearly | Yes | Mod. | 10 |
| 11 | San Francisco, Cal. | Food | 2 | 3W 4P | 12565 | 0.027 | 208 | 1501 | 2.9 | Ev. 5 wks | Yes | Gov. | 11 |
| 12 | St. Louis, Mo. | Dairy & Food | 2 | 4 | 10680S | ..... | N.S. | 3871 | 5.0 | Ev. 10 ds. | Yes | Gov. | 12 |
| | **Cities of 250,000 to 500,000 Population.** | | | | | | | | | | | | |
| 13 | Cincinnati, Ohio | Food | 2 | 6W10P | N.S. | ..... | 2000 | 3301 | 8.2 | 4 yearly | Yes | Gov. | 13 |
| 14 | Denver, Colo. | Dairy & Food | 1 | 4 | 7680S | ..... | 1400 | 1400 | 5.4 | Annually | Yes | Gov. | 14 |
| 15 | Indianapolis, Ind. | Health Dept. | 1 | 1W 1P | N.S. | ..... | 1500 | 1926[1] | ..... | 2 yearly | Yes | Gov. | 15 |
| 16 | Jersey City, N. J. | Milk | ..... | 2 | N.S. | ..... | 1700 | 1695 | 5.6 | Annually | Yes | Mod. | 16 |
| 17 | Kansas City, Mo. | Food & Dairy | ..... | 9 | N.S. | ..... | 2000 | 1740 | 5.3 | 2-5 yearly | Yes | Gov. | 17 |
| 18 | Milwaukee, Wis. | Food | 2 | 6 | N.S. | ..... | 3000 | 1400 | 3.0 | N.S. | No | ..... | 18 |
| 19 | Minneapolis, Minn. | Public Health Insp | 1P | 3 | N.S. | ..... | N.S. | N.S. | ..... | Annually | Yes | Gov. | 19 |
| 20 | Newark, N. J. | Food & Drugs | ..... | 5 | N.S. | ..... | N.S. | N.S. | ..... | 6 yearly | Yes | Gov. | 20 |
| 21 | New Orleans, La. | Food & Dairy | 1 | 5 | N.S. | ..... | N.S. | N.S. | ..... | 12 yearly | Yes | N.S. | 21 |
| 22 | Portland, Ore. | Health Dept. | 2 | 3 | N.S. | ..... | 900 | 2586 | 10.0 | Frequent | Yes | Gov. | 22 |
| 23 | Rochester, N. Y. | Dairy & Food | N.S. | N.S. | N.S. | ..... | 900 | N.S. | ..... | 3 yearly | Yes | State | 23 |
| 24 | Seattle, Wash. | Dairy & Food | 2 | 3 | 10400S | ..... | 450 | 1493 | 4.7 | N.S. | Yes | Gov. | 24 |
| 25 | Washington, D. C. | Dairy & Food | 7 | 17 | 29587 | 0.067 | 1577 | 5447 | 12.4 | 4 yearly | Yes | Mod. | 25 |
| | **Cities of less than 250,000 population.** | | | | | | | | | | | | |
| 26 | Akron, Ohio | Dairy & Food | 2P | ..... | ..... | ..... | 2600 | 298 | 1.4 | N.S. | Yes | Gov. | 26 |
| 27 | Albany, N. Y. | Milk & Markets | 1 | 1 | 4025 | 0.035 | 493 | 493 | 4.3 | Annually | Yes | State | 27 |
| 28 | Atlanta, Ga. | Dairy & Food | 1 | 4 | N.S. | ..... | 212 | N.S. | ..... | Irregularly | Yes | Gov. | 28 |
| 29 | Birmingham, Ala. | Food & Dairy | 2 | 1 | 10500 | 0.058 | 150 | N.S. | ..... | 12 yearly | Yes | Gov. | 29 |
| 30 | Bridgeport, Conn. | Sanitation | ..... | 2 | N.S. | ..... | 800 | 780 | 5.4 | 12 yearly | No | ..... | 30 |
| 31 | Cambridge, Mass. | Health Dept. | ..... | 1W 1P | N.S. | ..... | N.S. | N.S. | ..... | N.S. | N.S. | ..... | 31 |
| 32 | Camden, N. J. | Health Dept. | ..... | 1P | N.S. | ..... | N.S. | N.S. | ..... | N.S. | No | ..... | 32 |
| 33 | Canton, Ohio | Food & Dairy | 1 | ..... | 2250 | 0.025 | 600-700 | 325 | 3.7 | Annually | Yes | Gov. | 33 |
| 34 | Columbus, Ohio | Dairy & Food | 6 | 9 | 31258 | 0.131 | 2700 | 3153 | 13.3 | 2 yearly | Yes | Gov. | 34 |
| 35 | Dallas, Texas | Food & Milk | 1 | 4 | 10950S | ..... | 674 | 5393 | 33.8 | 6 yearly | Yes | Mod. | 35 |
| 36 | Dayton, Ohio | Food | 5P | 3 | N.S. | ..... | 1500 | 1640 | 10.7 | Annually | Yes | Gov. | 36 |
| 37 | Des Moines, Iowa | Health Dept. | ..... | 1W 3P | 2640 | 0.020 | N.S. | 250 | 1.9 | Irregular | Yes | Gov. | 37 |
| 38 | Duluth, Minn. | Health Dept. | 1 | 3 | 9185 | 0.092 | 285 | 1200 | 12.1 | 4 yearly | Yes | Mod. | 38 |
| 39 | Elizabeth, N. J. | Health Dept. | ..... | 1W 1P | N.S. | ..... | 700 | N.S. | ..... | N.S. | No | ..... | 39 |
| 40 | Erie, Pa. | Health Dept. | ..... | 2 | 1968 | 0.021 | 837 | 1013 | 10.8 | Annually | Yes | Gov. | 40 |
| 41 | Fall River, Mass. | Health Dept. | ..... | 1 | N.S. | ..... | 428 | 736 | 6.1 | 1-3 yearly | Yes | Mod. | 41 |
| 42 | Flint, Mich. | Health Dept. | ..... | 3 | 8165 | 0.089 | 700 | 993 | 10.8 | 1½ yearly | Yes | Gov. | 42 |
| 43 | Ft. Worth, Texas | Milk & Dairy | 1 | 1 | 6300 | 0.059 | 389 | 100 | 0.9 | 4-6 yearly | No | ..... | 43 |
| 44 | Grand Rapids, Mich. | Food | ..... | 3 | 7636 | 0.055 | 800 | 1054 | 7.6 | 12 yearly | Yes | Gov. | 44 |
| 45 | Hartford, Conn. | Health Dept. | ..... | 2W 2P | 4400 | 0.031 | 871 | 697 | 5.0 | 12 yearly | No | ..... | 45 |
| 46 | Houston, Texas | Food | ..... | 3 | 5040S | ..... | 417 | 3496 | 25.3 | 2 yearly | Yes | Mod. | 46 |
| 47 | Jacksonville, Fla. | Health Dept. | 1P | 2 | N.S. | ..... | 99 | 1173 | 12.7 | 12 yearly | No | ..... | 47 |
| 48 | Kansas City, Kan. | Health Dept. | ..... | 1 | 1800S | ..... | 1900 | 235 | 2.3 | Yearly | Yes | Gov. | 48 |
| 49 | Lawrence, Mass. | Milk | N.S. | N.S. | N.S. | ..... | N.S. | N.S. | ..... | N.S. | N.S. | N.S. | 49 |
| 50 | Louisville, Ky. | Dairy & Food | 2 | 5 | 10522 | 0.044 | 1200 | 383 | 1.6 | Annually | Yes | Gov. | 50 |
| 51 | Lowell, Mass. | Health Dept. | N.S. | N.S. | 3364S | ..... | 5000 | 200 | 1.7 | N.S. | Yes | Gov. | 51 |
| 52 | Lynn, Mass. | Health Dept. | N.S. | N.S. | N.S. | ..... | 21 | N.S. | ..... | 4 yearly | No | ..... | 52 |
| 53 | Memphis, Tenn. | Sanitary Insp. | 2 | 3 | 6274 | 0.038 | 413 | 1755 | 10.8 | 12 yearly | Yes | Gov. | 53 |
| 54 | Nashville, Tenn. | Health Dept. | 1P | 1 | N.S. | ..... | 507 | 82 | 0.7 | 4 yearly | Yes | Gov. | 54 |
| 55 | New Bedford, Mass. | Health Dept. | N.S. | N.S. | N.S. | ..... | 425 | N.S. | ..... | Annually | No | ..... | 55 |
| 56 | New Haven, Conn. | Inspection | ..... | 5 | N.S. | ..... | 750 | 2658 | 16.3 | Annually | Yes | Speel | 56 |
| 57 | Norfolk, Va. | Food | 1P | 1W 1P | N.S. | ..... | 40 | 1600 | 13.7 | Weekly | Yes | Gov. | 57 |
| 58 | Oakland, Cal. | Market & Food | 1 | 3 | 11820 | 0.054 | 75-80 | 2245 | 10.3 | 4 yearly | Yes | Gov. | 58 |
| 59 | Oklahoma City, Okla. | Health Dept. | ..... | 1 | 4950S | ..... | 1202 | 691 | 7.5 | 6 yearly | Yes | Mod. | 59 |
| 60 | Omaha, Neb. | Dairy | 1 | 4 | N.S. | ..... | N.S. | N.S. | ..... | N.S. | No | ..... | 60 |
| 61 | Paterson, N. J. | Health Dept. | 1P | 1 | N.S. | ..... | 200 | 60 | 0.4 | Annually | Yes | State | 61 |
| 62 | Providence, R. I. | Milk | ..... | 2 | 12271 | 0.051 | 83 | ..... | ..... | ..... | ..... | ..... | 62 |
| 63 | Reading, Pa. | Milk & Meat | 2 | ..... | N.S. | ..... | 430 | N.S. | ..... | Annually | Yes | N.S. | 63 |
| 64 | Richmond, Va. | Dairy | ..... | 2 | 7306 | 0.042 | 163 | 1749 | 10.1 | 12 yearly | Yes | Gov. | 64 |
| 65 | Salt Lake City, Utah. | Health Dept. | 1P | 1 | N.S. | ..... | 750 | 1416 | 12.0 | 3 yearly | Yes | Gov. | 65 |
| 66 | San Antonio, Texas. | Health Dept. | 1P | 2 | N.S. | ..... | 465 | 680 | 4.2 | Annually | Yes | Gov. | 66 |
| 67 | San Diego, Cal. | Health Dept. | 1 | ..... | N.S. | ..... | 66 | 550 | 7.3 | 12 yearly | Yes | Gov. | 67 |
| 68 | Savannah, Ga. | Health Dept. | 1P | 1 | N.S. | ..... | 42 | 3600[1] | ..... | Irregular | No | ..... | 68 |
| 69 | Schenectady, N. Y. | Health Dept. | 1P | 2 | 4118 | 0.046 | 540 | 452 | 5.0 | Annually | Yes | State | 69 |
| 70 | Scranton, Pa. | Health Dept. | ..... | 1W 1P | 4005 | 0.029 | 1200 | 1710 | 12.4 | 2 yearly | Yes | State | 70 |
| 71 | Somerville, Mass. | Milk | ..... | 1 | N.S. | ..... | 34 | N.S. | ..... | 12 yearly | Yes | Gov. | 71 |
| 72 | Spokane, Wash. | Food | ..... | 2 | N.S. | ..... | 600 | 1205 | 11.5 | 3-4 yearly | No | ..... | 72 |
| 73 | Springfield, Mass. | Health Dept. | ..... | 2 | 6164 | 0.047 | 1100 | 618 | 4.7 | Annually | Yes | Gov. | 73 |
| 74 | St. Paul, Minn. | Health Dept. | 1 | 2 | N.S. | ..... | 1000 | 388 | 1.6 | Annually | Yes | Mod. | 74 |
| 75 | Syracuse, N. Y. | Milk & Meat | 1 | 1 | N.S. | ..... | 625 | 787 | 4.5 | Annually | Yes | Gov. | 75 |
| 76 | Tacoma, Wash. | Health Dept. | 1P | 1 | N.S. | ..... | 109 | N.S. | ..... | 12 yearly | No | ..... | 76 |
| 77 | Toledo, Ohio | Dairy & Food | 2 | 1 | N.S. | ..... | 4000 | 3115 | 12.7 | Annually | No | ..... | 77 |
| 78 | Trenton, N. J. | Dairy & Food | ..... | 1 | N.S. | ..... | N.S. | 228 | 1.9 | Irregular | No | ..... | 78 |
| 79 | Utica, N. Y. | Dairy & Meat | ..... | 1W 1P | N.S. | ..... | 175 | ..... | ..... | Annually | Yes | State | 79 |
| 80 | Wilmington, Del. | Health Dept. | ..... | 1 | 1620 | 0.014 | N.S. | N.S. | ..... | N.S. | No | ..... | 80 |
| 81 | Worcester, Mass. | Health Dept. | ..... | 1 | N.S. | ..... | 350 to 400 | 150 | 0.8 | N.S. | Yes | Gov. | 81 |
| 82 | Yonkers, N. Y. | Health Dept. | 1 | 1 | N.S. | ..... | 900 | N.S. | ..... | 12 yearly | No | ..... | 82 |
| 83 | Youngstown, Ohio | Health Dept. | ..... | 1P | 3080 | 0.023 | 763 | 833 | 6.2 | Annually | Yes | O. Un | 83 |

S—Salaries only. W—Whole Time. P—Part Time. N. S.—Not Stated. [1]—Includes Milk Depot Inspections.

# TABLE VII—SUPERVISION OF MILK SUPPLIES IN EIGHTY-THREE CITIES, 1920

| | FIELD CONTROL | | | | | | | | | Milk for Which Herds Are Tuberculin Tested | CITIES | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Milk Depots | | | | | Temperature Requirements | | | | | | |
| | No. | Inspections | | | Are They Scored | At Farms | Transit | Milk Depots | Delivery | | | |
| | | No. | Per 1000 Pop'n | Frequency | | | | | | | | |
| | | | | | | | | | | | **Cities of over 500,000 Population** | |
| 1 | 5 | 2400 | 3.2 | 4 week | Yes | N.S. | 60 | 50 | N.S. | Selected raw | Baltimore, Md. | 1 |
| 2 | 160 | N.S. | ..... | Daily | Yes | 50 | 50 | 50 | 50 | Not required | Boston, Mass. | 2 |
| 3 | 143 | N.S. | ..... | 24 year | No | 50 | 50 | 50 | 50 | Certified | Buffalo, N. Y. | 3 |
| 4 | 589 | 19253 | 7.1 | Weekly | Yes | 50 | 50 | 45 | 50 | Not required | Chicago, Ill. | 4 |
| 5 | 249 | 8945 | 11.2 | Weekly | Yes | 55 | 55 | 55 | 55 | Grade A & Certified | Cleveland, Ohio | 5 |
| 6 | 46 | 2752 | 2.7 | 3 weekly | Yes | 60 | 60 | -50 | -50 | Grade A & Certified | Detroit, Mich | 6 |
| 7 | 14 | 2400 | 4.1 | Daily | Yes | 60 | 60 | 40 | 50 | All raw | Los Angeles, Cal | 7 |
| 8 | N.S. | N.S. | ..... | Past.12 Raw4½ | Yes | 50 | 50 | 50 | 50 | Grade A raw | New York, N. Y. | 8 |
| 9 | 65 | N.S. | ..... | N.S. | Yes | ..... | 60 | 60 | 60 | All raw | Philadelphia, Pa. | 9 |
| 10 | 2000 | N.S. | ..... | 26 year | Yes | 60 | 60 | -50 | -50 | All raw | Pittsburgh, Pa | 10 |
| 11 | 34 | 374 | 0.7 | 12 year | No | 45 | Iced | Iced | Iced | All raw | San Francisco, Cal. | 11 |
| 12 | 42 | N.S. | ..... | Weekly | Yes | 50 | 50 | 50 | 50 | All raw | St. Louis, Mo. | 12 |
| | | | | | | | | | | | **Cities of 250,000 to 500,000 Population.** | |
| 13 | N.S. | 3011 | 7.5 | Every 10 days | Yes | 50-60 | N.S. | 50 | -50 | Certified | Cincinnati, Ohio | 13 |
| 14 | 12 | 444 | 1.7 | 24-36 yearly | Yes | 60 | 60 | 50 | 50 | Not required | Denver, Colo. | 14 |
| 15 | 40 | ..... | ..... | 5-6 yearly | Yes | No | Require | ments | | All raw | Indianapolis, Ind. | 15 |
| 16 | N.S. | 30 | 0.1 | Constant | Yes | N.S. | N.S. | N.S. | N.S. | All raw | Jersey City, N. J. | 16 |
| 17 | 9 | N.S. | ..... | 3 weekly | Yes | 50 | 50 | 50 | 50 | All raw | Kansas City, Mo. | 17 |
| 18 | 28 | 1536 | 3.3 | Daily | No | 60 | 60 | 60 | 60 | All raw | Milwaukee, Wis. | 18 |
| 19 | 18 | N.S. | ..... | Annually | Yes | 50 | 50 | 50 | 50 | All raw | Minneapolis, Minn. | 19 |
| 20 | N.S. | N.S. | ..... | 4 yearly | Yes | 60 | N.S. | 60 | 50 | Grade A raw | Newark, N. J. | 20 |
| 21 | N.S. | N.S. | ..... | Irregular | Yes | No | Require | ments | | Certified | New Orleans, La. | 21 |
| 22 | 20 | 392 | 1.5 | 2 yearly | Yes | 60 | 60 | 67 | 60 | All raw | Portland, Ore. | 22 |
| 23 | 132 | N.S. | ..... | 2 yearly | Yes | N.S. | N.S. | N.S. | N.S. | Grade A raw & Cert. | Rochester, N. Y. | 23 |
| 24 | 18 | 1857 | 5.8 | N.S. | Yes | 60 | 60 | 50 | 55 | All raw | Seattle, Wash. | 24 |
| 25 | 40 | 585 | 1.3 | 24 yearly | No | No | Require | ments | | All raw | Washington, D. C. | 25 |
| | | | | | | | | | | | **Cities of less than 250,000 Population.** | |
| 26 | 5 | 209 | 1.0 | 12 yearly | No | 65 | 65 | 65 | 65 | All raw | Akron, Ohio | 26 |
| 27 | 25 | 293 | 2.5 | 12 yearly | No | 50 | 50 | 50 | 50 | Grade A raw & Cert. | Albany, N. Y. | 27 |
| 28 | 20 | 4140 | 20.5 | Irregular | Yes | 50 | 50 | 50 | 50 | All | Atlanta, Ga. | 28 |
| 29 | N.S. | N.S. | ..... | Weekly | No | 50 | 50 | 50 | 50 | All raw | Birmingham, Ala. | 29 |
| 30 | 7 | 1000 | 7.0 | Weekly | Yes | 50 | 50 | 50 | 50 | Grade A raw | Bridgeport, Conn. | 30 |
| 31 | N.S. | N.S. | ..... | N.S. | N.S. | N.S. | N.S. | N.S. | N.S. | Not required | Cambridge, Mass. | 31 |
| 32 | 5 | N.S. | ..... | Irregular | No | No | Require | ments. | | Certified | Camden, N. J. | 32 |
| 33 | 17 | N.S. | ..... | Weekly | No | 70 | 70 | 60 | 60 | All raw | Canton, Ohio | 33 |
| 34 | 12 | 1132 | 4.8 | N.S. | Yes | 65 | 65 | 65 | 65 | All raw | Columbus, Ohio | 34 |
| 35 | 5 | 60 | 3.7 | 24 yearly | Yes | 55 | 55 | 55 | 55 | All | Dallas, Texas | 35 |
| 36 | 21 | 986 | 6.4 | 12 yearly | Yes | 60 | ..... | 50 | 50 | All raw | Dayton, Ohio | 36 |
| 37 | 29 | 1080 | 8.4 | 2 weekly | Yes | 50 | 50 | 50 | 50 | Not required | Des Moines, Iowa | 37 |
| 38 | 1 | 104 | 1.0 | Weekly | No | 50 | 50 | 50 | 50 | All raw | Duluth, Minn | 38 |
| 39 | 18 | N.S. | ..... | N.S. | No | 50 | 50 | 50 | 50 | All raw | Elizabeth, N. J. | 39 |
| 40 | 4 | N.S. | ..... | 24 yearly | Yes | 50 | ..... | 50 | 50 | Not required | Erie, Pa. | 40 |
| 41 | 54 | 191 | 1.5 | 4 yearly | No | 50 | 50 | 50 | 50 | (Physical only) | Fall River, Mass. | 41 |
| 42 | 17 | 477 | 5.2 | Weekly | No | ..... | ..... | 60 | ..... | All | Flint, Mich. | 42 |
| 43 | 5 | 100 | 0.9 | 24 yearly | No | 50 | 65 | 65 | 65 | All | Ft. Worth, Texas | 43 |
| 44 | 31 | 216 | 1.5 | N.S. | ..... | -60 | -60 | -60 | -60 | Grade A & Certified | Grand Rapids, Mich. | 44 |
| 45 | 96 | 1957 | 14.1 | 24 yearly | No | 50 | 50 | 50 | 50 | Not required | Hartford, Conn. | 45 |
| 46 | 5 | 238 | 1.7 | 2 weekly | No | 65 | N.S. | 50 | 65 | All raw | Houston, Texas | 46 |
| 47 | 8 | 694 | 7.6 | 12 yearly | Yes | 50 | 50 | 50 | 50 | All | Jacksonville, Fla. | 47 |
| 48 | 10 | 58 | 0.5 | 12 yearly | Yes | 60 | 60 | 50 | 50 | All | Kansas City, Kan. | 48 |
| 49 | 3 | N.S. | ..... | N.S. | N.S. | ..... | ..... | ..... | 60 | Not required | Lawrence, Mass. | 49 |
| 50 | 32 | 185 | 0.8 | 12 yearly | Yes | ..... | ..... | 45 | ..... | Not required | Louisville, Ky. | 50 |
| 51 | 99 | N.S. | ..... | Irregular | N.S. | 50 | 50 | 50 | 60 | Not required | Lowell, Mass. | 51 |
| 52 | 1 | N.S. | ..... | N.S. | N.S. | N.S. | N.S. | N.S. | N.S. | Not required | Lynn, Mass. | 52 |
| 53 | 4 | 74 | 0.4 | 24-36 yearly | Yes | 60 | 60 | 60 | 60 | All | Memphis, Tenn. | 53 |
| 54 | 2 | 234 | 1.9 | Weekly | Yes | No | Require | ments. | | All | Nashville, Tenn. | 54 |
| 55 | 77 | N.S. | ..... | N.S. | N.S. | N.S. | N.S. | N.S. | N.S. | Not required | New Bedford, Mass. | 55 |
| 56 | 70 | 2778 | 17.0 | Annually | Yes | 50 | 50 | 50 | 50 | Not required | New Haven, Conn. | 56 |
| 57 | 15 | N.S. | ..... | 12 yearly | Yes | 50 | 50 | 50 | 50 | All | Norfolk, Va. | 57 |
| 58 | 13 | 1496 | 6.0 | Weekly | Yes | 65 | 65 | -50 | -50 | All raw | Oakland, Cal. | 58 |
| 59 | 8 | 171 | 1.8 | 2 weekly | Yes | 70 | 70 | 55 | 55 | All raw | Oklahoma City, Okla. | 59 |
| 60 | 107 | 786 | 4.0 | 12 yearly | Yes | 50 | 50 | 50 | 50 | All raw | Omaha, Neb. | 60 |
| 61 | 26 | N.S. | ..... | N.S. | Yes | -50 | -50 | -50 | -50 | Grade A & Certified | Paterson, N. J. | 61 |
| 62 | 80 | N.S. | ..... | Often | Yes | No | Require | ments. | | Not required. | Providence, R. I. | 62 |
| 63 | 13 | 277 | 2.5 | 4 yearly | No | 60 | 60 | 60 | 60 | Not required | Reading, Pa. | 63 |
| 64 | 2 | 50 | 0.2 | 12 yearly | Yes | 60-70 | 50 | 50 | 50 | Grade A raw | Richmond, Va. | 64 |
| 65 | 17 | 996 | 8.4 | 12 yearly | Yes | 60 | 60 | 60 | 60 | All | Salt Lake City, Utah. | 65 |
| 66 | 11 | 642 | 4.0 | Weekly | Yes | 70 | 70 | 70 | 70 | All | San Antonio, Texas | 66 |
| 67 | 4 | 723 | 9.6 | 4 yearly | Yes | 60 | 70 | 70 | 70 | All raw | San Diego, Cal. | 67 |
| 68 | 33 | ..... | ..... | N.S. | No | 50 | ..... | 50 | ..... | All raw | Savannah, Ga. | 68 |
| 69 | 54 | 312 | 3.5 | 12 yearly | No | 50 | 50 | 50 | 50 | Grade A | Schenectady N. Y. | 69 |
| 70 | 9 | 2905 | 21.0 | 2 yearly | Yes | N.S. | N.S. | N.S. | 50 | Certified | Scranton, Pa. | 70 |
| 71 | 19 | 149 | 1.6 | 12 yearly | No | 50 | 50 | 50 | 50 | N.S. | Somerville, Mass. | 71 |
| 72 | 4 | 2630 | 25.2 | N.S. | No | 55 | 55 | 55 | 55 | All | Spokane, Wash. | 72 |
| 73 | 52 | 510 | 3.9 | 12 yearly | No | 50 | 50 | 50 | 50 | Certified | Springfield, Mass. | 73 |
| 74 | 6 | 236 | 1.0 | Weekly | Yes | 55 | 55 | 55 | 55 | All raw, ex. ret. prod. | St. Paul, Minn. | 74 |
| 75 | 29 | 223 | 1.3 | Weekly | Yes | 50-60 | 50-60 | 50-60 | 50-60 | Cert. & Insp. | Syracuse, N. Y. | 75 |
| 76 | 3 | N.S. | ..... | N.S. | No | N.S. | 60 | 60 | -60 | Not required | Tacoma, Wash. | 76 |
| 77 | 21 | 1004 | 4.1 | Weekly | No | 65 | 65 | 50 | 65 | All raw | Toledo, Ohio | 77 |
| 78 | N.S. | 870 | 7.3 | 12 yearly | No | 50 | 50 | 50 | 50 | Not required | Trenton, N. J. | 78 |
| 79 | 53 | 58 | 0.6 | 12 yearly | Yes | 50-60 | N.S. | 45-50 | ..... | Grade A raw & Cert. | Utica, N. Y. | 79 |
| 80 | N.S. | 2061 | 1.8 | Weekly | No | No | Require | ments | | N.S. | Wilmington, Del. | 80 |
| 81 | 100 | N.S. | ..... | N.S. | N.S. | N.S. | N.S. | N.S. | N.S. | Not required | Worcester, Mass. | 81 |
| 82 | N.S. | N.S. | ..... | 12 yearly | Yes | 50 | 50 | 50 | 50 | Certified | Yonkers, N. Y. | 82 |
| 83 | 11 | 494 | 3.7 | Constant | Yes | 65 | 65 | 65 | 65 | Not required | Youngstown, Ohio | 83 |

S—Salaries only. W—Whole Time. P—Part time. N.S.—Not Stated. ¹—Includes Milk Depot Inspections.

# TABLE VII—SUPERVISION OF MILK SUPPLIES IN EIGHTY-THREE CITIES, 1920

| | CITIES | ORGANIZATION | | | | | FIELD CONTROL | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Producing Farms | | | | | | |
| | | | Personnel | | Expenditures | | | Inspections | | | Scoring | | |
| | | Conducted by Division of | Veterinarians | Inspectors | Total | Per Capita | Number | No. | Per 1000 Pop'n | Frequency | Are They Scored | Score Card Used | |
| | **Cities of over 500,000 Population.** | | | | | | | | | | | | |
| 1 | Baltimore, Md. | Chemistry & Food | 1 | 21 | 24500S | ..... | 3800 | 6944 | 9.4 | 4 yearly | No | Mod | 1 |
| 2 | Boston, Mass. | Food | 1 | 8 | N.S. | ..... | 30000 | N.S. | ..... | Constantly | Yes | Gov. | 2 |
| 3 | Buffalo, N. Y. | Food | 1 | 17 | N.S. | ..... | 2700 to 2800 | N.S. | ..... | 1-4 yrly. | Yes | Mod. | 3 |
| 4 | Chicago, Ill. | Food | 2 | 28 | N.S. | ..... | 18000 | 7698 | 2.8 | Irregular | Yes | Gov. | 4 |
| 5 | Cleveland, Ohio | Food & Dairy | 2P | 11 | 27275 | 0.034 | 4656 | 5957 | 7.4 | Yearly | Yes | Gov. | 5 |
| 6 | Detroit, Mich. | Dairy & Food | 2 | 12 | 33360 | 0.033 | 8000 | 7826 | 7.8 | 2 yearly | Yes | Gov. | 6 |
| 7 | Los Angeles, Cal. | Food | 1 | 9 | 20880 | 0.036 | 1400 | 10486 | 18.1 | 12 yearly | Yes | Gov. | 7 |
| 8 | New York, N. Y. | Food & Drugs | 1 | 29 | N.S. | ..... | 40000to50000 | N.S. | ..... | 4 yearly | Yes | N.Y.C. | 8 |
| 9 | Philadelphia, Pa. | Milk | 1 | 16 | N.S. | ..... | 12000 | N.S. | ..... | N.S. | Yes | Gov. | 9 |
| 10 | Pittsburgh, Pa. | Food & Drugs | | 10 | N.S. | ..... | 8000 | 24000 | 40.8 | 4 yearly | Yes | Mod. | 10 |
| 11 | San Francisco, Cal. | Food | 2 | 3W 4P | 12565 | 0.027 | 208 | 1501 | 2.9 | Ev. 5 wks | Yes | Gov. | 11 |
| 12 | St. Louis, Mo. | Dairy & Food | 2 | 4 | 10680S | ..... | N.S. | 3871 | 5.0 | Ev. 10 ds. | Yes | Gov. | 12 |
| | **Cities of 250,000 to 500,000 Population.** | | | | | | | | | | | | |
| 13 | Cincinnati, Ohio | Food | 2 | 6W10P | N.S. | ..... | 2000 | 3301 | 8.2 | 4 yearly | Yes | Gov. | 13 |
| 14 | Denver, Colo. | Dairy & Food | 1 | 4 | 7680S | ..... | 1400 | 1400 | 5.4 | Annually | Yes | Gov. | 14 |
| 15 | Indianapolis, Ind. | Health Dept. | 1 | 1W 1P | N.S. | ..... | 1500 | 1926[1] | ..... | 2 yearly | Yes | Gov. | 15 |
| 16 | Jersey City, N. J. | Milk | | 2 | N.S. | ..... | 1700 | 1695 | 5.6 | Annually | Yes | Mod. | 16 |
| 17 | Kansas City, Mo. | Food & Dairy | | 9 | N.S. | ..... | 2000 | 1740 | 5.3 | 2-5 yearly | Yes | Gov. | 17 |
| 18 | Milwaukee, Wis. | Food | 2 | 6 | N.S. | ..... | 3000 | 1400 | 3.0 | N.S. | No | ..... | 18 |
| 19 | Minneapolis, Minn. | Public Health Insp. | 1P | 3 | N.S. | ..... | N.S. | N.S. | ..... | Annually | Yes | Gov. | 19 |
| 20 | Newark, N. J. | Food & Drugs | | 5 | N.S. | ..... | N.S. | N.S. | ..... | 6 yearly | Yes | Gov. | 20 |
| 21 | New Orleans, La. | Food & Dairy | 1 | 5 | N.S. | ..... | N.S. | N.S. | ..... | 12 yearly | Yes | N.S. | 21 |
| 22 | Portland, Ore. | Health Dept. | 2 | 3 | N.S. | ..... | 900 | 2586 | 10.0 | Frequent | Yes | Gov. | 22 |
| 23 | Rochester, N. Y. | Dairy & Food | N.S. | N.S. | N.S. | ..... | 900 | N.S. | ..... | 3 yearly | Yes | State | 23 |
| 24 | Seattle, Wash. | Dairy & Food | 2 | 3 | 10400S | ..... | 450 | 1493 | 4.7 | N.S. | Yes | Gov. | 24 |
| 25 | Washington, D. C. | Dairy & Food | 7 | 17 | 29587 | 0.067 | 1577 | 5447 | 12.4 | 4 yearly | Yes | Mod. | 25 |
| | **Cities of less than 250,000 population.** | | | | | | | | | | | | |
| 26 | Akron, Ohio | Dairy & Food | 2P | ..... | 4025 | 0.035 | 2600 | 298 | 1.4 | N.S. | Yes | Gov. | 26 |
| 27 | Albany, N. Y. | Milk & Markets | 1 | 1 | N.S. | ..... | 493 | 493 | 4.3 | Annually | Yes | State | 27 |
| 28 | Atlanta, Ga. | Dairy & Food | 1 | 4 | 10500 | 0.058 | 212 | N.S. | ..... | Irregularly | Yes | Gov. | 28 |
| 29 | Birmingham, Ala. | Food & Dairy | 2 | 1 | N.S. | ..... | 150 | N.S. | ..... | 12 yearly | Yes | Gov. | 29 |
| 30 | Bridgeport, Conn. | Sanitation | ..... | 2 | N.S. | ..... | 800 | 780 | 5.4 | 12 yearly | No | ..... | 30 |
| 31 | Cambridge, Mass. | Health Dept. | ..... | 1W 1P | N.S. | ..... | N.S. | N.S. | ..... | N.S. | N.S. | ..... | 31 |
| 32 | Camden, N. J. | Health Dept. | ..... | 1P | N.S. | ..... | N.S. | N.S. | ..... | N.S. | No | ..... | 32 |
| 33 | Canton, Ohio | Food & Dairy | 1 | ..... | 2250 | 0.025 | 600-700 | 325 | 3.7 | Annually | Yes | Gov. | 33 |
| 34 | Columbus, Ohio | Dairy & Food | 6 | 9 | 31258 | 0.131 | 2700 | 3153 | 13.3 | 2 yearly | Yes | Gov. | 34 |
| 35 | Dallas, Texas | Food & Milk | 1 | 4 | 10950S | ..... | 674 | 5393 | 33.8 | 6 yearly | Yes | Mod. | 35 |
| 36 | Dayton, Ohio | Food | 5P | 3 | N.S. | ..... | 1500 | 1640 | 10.7 | Annually | Yes | Gov. | 36 |
| 37 | Des Moines, Iowa | Health Dept. | ..... | 1W 3P | 2640 | 0.020 | N.S. | 250 | 1.9 | Irregular | Yes | Gov. | 37 |
| 38 | Duluth, Minn. | Health Dept. | 1 | 3 | 9185 | 0.092 | 285 | 1200 | 12.1 | 4 yearly | Yes | Mod. | 38 |
| 39 | Elizabeth, N. J. | Health Dept. | ..... | 1W 1P | N.S. | ..... | 700 | N.S. | ..... | N.S. | No | ..... | 39 |
| 40 | Erie, Pa. | Health Dept. | ..... | 2 | 1968 | 0.021 | 837 | 1013 | 10.8 | Annually | Yes | Gov. | 40 |
| 41 | Fall River, Mass. | Health Dept. | ..... | 1 | N.S. | ..... | 428 | 736 | 6.1 | 1-3 yearly | Yes | Mod. | 41 |
| 42 | Flint, Mich. | Health Dept. | ..... | 3 | 8165 | 0.089 | 709 | 993 | 10.8 | 1½ yearly | Yes | Gov. | 42 |
| 43 | Ft. Worth, Texas | Health Dept. | ..... | 3 | 7636 | 0.055 | 389 | 100 | 0.9 | 4-6 yearly | No | ..... | 43 |
| 44 | Grand Rapids, Mich. | Milk & Dairy | 1 | 1 | 6300 | 0.059 | 800 | 1054 | 7.6 | 12 yearly | Yes | Gov. | 44 |
| 45 | Hartford, Conn. | Food | ..... | 3 | 7636 | 0.055 | 800 | 1054 | 7.6 | 12 yearly | No | ..... | 45 |
| 46 | Houston, Texas | Health Dept. | ..... | 2W 2P | 4400 | 0.031 | 871 | 697 | 5.0 | 12 yearly | Yes | Mod. | 46 |
| 47 | Jacksonville, Fla. | Food | ..... | 3 | 5040S | ..... | 417 | 3496 | 25.3 | 2 yearly | No | ..... | 47 |
| 48 | Kansas City, Kan. | Health Dept. | 1P | 2 | N.S. | ..... | 90 | 1173 | 12.7 | 12 yearly | Yes | Gov. | 48 |
| 49 | Lawrence, Mass. | Health Dept. | ..... | 1 | 1800S | ..... | 1900 | 235 | 2.3 | Yearly | N.S. | N.S. | 49 |
| 50 | Louisville, Ky. | Milk | N.S. | N.S. | N.S. | ..... | N.S. | N.S. | ..... | N.S. | Yes | Gov. | 50 |
| 51 | Lowell, Mass. | Dairy & Food | 2 | 5 | 10522 | 0.044 | 1200 | 383 | 1.6 | Annually | Yes | Gov. | 51 |
| 52 | Lynn, Mass. | Health Dept. | N.S. | N.S. | 3364S | ..... | 5000 | 200 | 1.7 | N.S. | Yes | Gov. | 52 |
| 53 | Memphis, Tenn. | Health Dept. | N.S. | N.S. | N.S. | ..... | 21 | N.S. | ..... | 4 yearly | No | ..... | 53 |
| 54 | Nashville, Tenn. | Sanitary Insp. | 2 | 3 | 6274 | 0.038 | 413 | 1755 | 10.8 | 12 yearly | Yes | Gov. | 54 |
| 55 | New Bedford, Mass. | Health Dept. | 1P | 1 | N.S. | ..... | 507 | 82 | 0.7 | 4 yearly | Yes | Gov. | 55 |
| 56 | New Haven, Conn. | Health Dept. | N.S. | N.S. | N.S. | ..... | 425 | N.S. | ..... | Annually | No | ..... | 56 |
| 57 | Norfolk, Va. | Inspection | ..... | 5 | N.S. | ..... | 750 | 2658 | 16.3 | Annually | Yes | Specl. | 57 |
| 58 | Oakland, Cal. | Food | 1P | 1W 1P | N.S. | ..... | 40 | 1600 | 13.7 | Weekly | Yes | Gov. | 58 |
| 59 | Oklahoma City, Okla. | Market & Food | 1 | 3 | 11820 | 0.054 | 75-80 | 2245 | 10.3 | 4 yearly | Yes | Mod. | 59 |
| 60 | Omaha, Neb. | Health Dept. | | 1 | 4950S | ..... | 1202 | 691 | 7.5 | 6 yearly | No | ..... | 60 |
| 61 | Paterson, N. J. | Dairy | 1 | 4 | N.S. | ..... | N.S. | N.S. | ..... | N.S. | Yes | State | 61 |
| 62 | Providence, R. I. | Health Dept. | 1P | 1 | N.S. | ..... | 200 | 60 | 0.4 | Annually | ..... | ..... | 62 |
| 63 | Reading, Pa. | Milk | ..... | 2 | 12271 | 0.051 | 83 | ..... | ..... | ..... | Yes | N.S. | 63 |
| 64 | Richmond, Va. | Milk & Meat | 2 | ..... | N.S. | ..... | 430 | N.S. | ..... | Annually | Yes | Gov. | 64 |
| 65 | Salt Lake City, Utah. | Dairy | ..... | 2 | 7306 | 0.042 | 163 | 1749 | 10.1 | 12 yearly | Yes | Gov. | 65 |
| 66 | San Antonio, Texas. | Health Dept. | 1P | 1 | N.S. | ..... | 750 | 1416 | 12.0 | 3 yearly | Yes | Gov. | 66 |
| 67 | San Diego, Cal. | Health Dept. | 1P | 2 | N.S. | ..... | 465 | 680 | 4.2 | Annually | Yes | Gov. | 67 |
| 68 | Savannah, Ga. | Health Dept. | 1 | ..... | N.S. | ..... | 66 | 550 | 7.3 | 12 yearly | No | ..... | 68 |
| 69 | Schenectady, N. Y. | Health Dept. | 1P | 1 | N.S. | ..... | 42 | 3600[1] | ..... | Irregular | Yes | State | 69 |
| 70 | Scranton, Pa. | Health Dept. | 1P | 2 | 4118 | 0.046 | 540 | 452 | 5.0 | Annually | Yes | State | 70 |
| 71 | Somerville, Mass. | Health Dept. | ..... | 1W 1P | 4005 | 0.029 | 1209 | 1710 | 12.4 | 2 yearly | Yes | Gov. | 71 |
| 72 | Scranton, Pa. | Health Dept. | ..... | 1 | N.S. | ..... | 34 | N.S. | ..... | 12 yearly | ..... | ..... | 72 |
| 73 | Somerville, Mass. | Milk | ..... | 2 | N.S. | ..... | 600 | 1205 | 11.5 | 3-4 yearly | No | ..... | 73 |
| 74 | Spokane, Wash. | Food | ..... | 2 | 6164 | 0.047 | 1100 | 618 | 4.7 | Annually | Yes | Gov. | 74 |
| 75 | Springfield, Mass. | Health Dept. | 1 | 2 | N.S. | ..... | 1000 | 388 | 1.6 | Annually | Yes | Mod. | 75 |
| 76 | St. Paul, Minn. | Health Dept. | 1 | 1 | N.S. | ..... | 625 | 787 | 4.5 | Annually | Yes | Gov. | 76 |
| 77 | Syracuse, N. Y. | Milk & Meat | 1P | 1 | N.S. | ..... | 109 | N.S. | ..... | 12 yearly | No | ..... | 77 |
| 78 | Tacoma, Wash. | Health Dept. | 2 | 1 | N.S. | ..... | 4000 | 3115 | 12.7 | Annually | No | ..... | 78 |
| 79 | Toledo, Ohio | Dairy & Food | ..... | 1 | N.S. | ..... | N.S. | 228 | 1.9 | Irregular | No | ..... | 79 |
| 80 | Trenton, N. J. | Dairy & Food | ..... | 1W 1P | N.S. | ..... | 175 | ..... | ..... | Annually | Yes | State | 80 |
| 81 | Utica, N. Y. | Dairy & Meat | ..... | 1 | 1620 | 0.014 | N.S. | N.S. | ..... | N.S. | No | ..... | 81 |
| 82 | Wilmington, Del. | Health Dept. | ..... | 1 | N.S. | ..... | 350 to 400 | 150 | 0.8 | N.S. | Yes | Gov. | 82 |
| 83 | Worcester, Mass. | Health Dept. | ..... | 1 | N.S. | ..... | 900 | N.S. | ..... | 12 yearly | No | ..... | 83 |
| | Yonkers, N. Y. | Health Dept. | 1 | 1 | N.S. | ..... | 763 | 833 | 6.2 | Annually | Yes | O. Un | |
| | Youngstown, Ohio | Health Dept. | ..... | 1P | 3080 | 0.023 | | | | | | | |

S—Salaries only. W—Whole Time. P—Part Time. N. S.—Not Stated. [1]—Includes Milk Depot Inspections.

# TABLE VII—SUPERVISION OF MILK SUPPLIES IN EIGHTY-THREE CITIES, 1920

| | FIELD CONTROL | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Milk Depots | | | | | Temperature Requirements | | | | Milk for Which Herds Are Tuberculin Tested | CITIES |
| | No. | Inspections | | | Are They Scored | At Farms | Transit | Milk Depots | Delivery | | |
| | | No. | Per 1000 Pop'n | Frequency | | | | | | | |
| | | | | | | | | | | | **Cities of over 500,000 Population** |
| 1 | 5 | 2400 | 3.2 | 4 week | Yes | N.S. | 60 | 50 | N.S. | Selected raw | Baltimore, Md. 1 |
| 2 | 160 | N.S. | ..... | Daily | Yes | 50 | 50 | 50 | 50 | Not required | Boston, Mass. 2 |
| 3 | 143 | N.S. | ..... | 24 year | No | 50 | 50 | 50 | 50 | Certified | Buffalo, N. Y. 3 |
| 4 | 589 | 19253 | 7.1 | Weekly | Yes | 50 | 50 | 45 | 50 | Not required | Chicago, Ill. 4 |
| 5 | 249 | 8945 | 11.2 | Weekly | Yes | 55 | 55 | 55 | 55 | Grade A & Certified | Cleveland, Ohio. 5 |
| 6 | 46 | 2752 | 2.7 | 3 weekly | Yes | 60 | 60 | –50 | –50 | Grade A & Certified | Detroit, Mich. 6 |
| 7 | 14 | 2400 | 4.1 | Daily | Yes | 60 | 60 | 40 | 50 | All raw | Los Angeles, Cal. 7 |
| 8 | N.S. | N.S. | ..... | Past.12 Raw4½ | Yes | 50 | 50 | 50 | 50 | Grade A raw | New York, N. Y. 8 |
| 9 | 65 | N.S. | ..... | N.S. | Yes | ..... | 60 | 60 | 60 | All raw | Philadelphia, Pa. 9 |
| 10 | 2000 | N.S. | ..... | 26 year | Yes | 60 | 60 | –50 | –50 | All raw | Pittsburgh, Pa. 10 |
| 11 | 34 | 374 | 0.7 | 12 year | No | 45 | Iced | Iced | Iced | All raw | San Francisco, Cal. 11 |
| 12 | 42 | N.S. | ..... | Weekly | Yes | 50 | 50 | 50 | 50 | All raw | St. Louis, Mo. 12 |
| | | | | | | | | | | | **Cities of 250,000 to 500,000 Population.** |
| 13 | N.S. | 3011 | 7.5 | Every 10 days | Yes | 50-60 | N.S. | 50 | –50 | Certified | Cincinnati, Ohio. 13 |
| 14 | 12 | 444 | 1.7 | 24-36 yearly | Yes | 60 | 60 | 50 | 50 | Not required | Denver, Colo. 14 |
| 15 | 40 | ..... | ..... | 5-6 yearly | Yes | No | Require | ments | | All raw | Indianapolis, Ind. 15 |
| 16 | N.S. | 30 | 0.1 | Constant | Yes | N.S. | N.S. | N.S. | N.S. | All raw | Jersey City, N. J. 16 |
| 17 | 9 | N.S. | ..... | 3 weekly | Yes | 50 | 50 | 50 | 50 | All raw | Kansas City, Mo. 17 |
| 18 | 28 | 1536 | 3.3 | Daily | No | 60 | 60 | 60 | 60 | All raw | Milwaukee, Wis. 18 |
| 19 | 18 | N.S. | ..... | Annually | Yes | 50 | 50 | 50 | 50 | All raw | Minneapolis, Minn. 19 |
| 20 | N.S. | N.S. | ..... | 4 yearly | Yes | 60 | N.S. | 60 | 50 | Grade A raw | Newark, N. J. 20 |
| 21 | N.S. | N.S. | ..... | Irregular | Yes | No | Require | ments | | Certified | New Orleans, La. 21 |
| 22 | 20 | 392 | 1.5 | 2 yearly | Yes | 60 | 60 | 67 | 60 | All raw | Portland, Ore. 22 |
| 23 | 132 | N.S. | ..... | 2 yearly | Yes | N.S. | N.S. | N.S. | N.S. | Grade A raw & Cert. | Rochester, N. Y. 23 |
| 24 | 18 | 1857 | 5.8 | N.S. | Yes | 60 | 60 | 50 | 55 | All raw | Seattle, Wash. 24 |
| 25 | 40 | 585 | 1.3 | 24 yearly | No | No | Require | ments | | All raw | Washington, D. C. 25 |
| | | | | | | | | | | | **Cities of less than 250,000 Population.** |
| 26 | 5 | 209 | 1.0 | 12 yearly | No | 65 | 65 | 65 | 65 | All raw | Akron, Ohio. 26 |
| 27 | 25 | 293 | 2.5 | 12 yearly | No | 50 | 50 | 50 | 50 | Grade A raw & Cert. | Albany, N. Y. 27 |
| 28 | 20 | 4140 | 20.5 | Irregular | Yes | 50 | 50 | 50 | 50 | All | Atlanta, Ga. 28 |
| 29 | N.S. | N.S. | ..... | Weekly | No | 50 | 50 | 50 | 50 | All raw | Birmingham, Ala. 29 |
| 30 | 7 | 1000 | 7.0 | Weekly | Yes | 50 | 50 | 50 | 50 | Grade A raw | Bridgeport, Conn. 30 |
| 31 | N.S. | N.S. | ..... | N.S. | N.S. | N.S. | N.S. | N.S. | N.S. | Not required | Cambridge, Mass. 31 |
| 32 | 5 | N.S. | ..... | Irregular | No | No | Require | ments. | | Certified | Camden, N. J. 32 |
| 33 | 17 | N.S. | ..... | Weekly | No | 70 | 70 | 60 | 60 | All raw | Canton, Ohio. 33 |
| 34 | 12 | 1132 | 4.8 | N.S. | Yes | 65 | 65 | 65 | 65 | All raw | Columbus, Ohio. 34 |
| 35 | 5 | 60 | 3.7 | 24 yearly | Yes | 55 | 55 | 55 | 55 | All | Dallas, Texas. 35 |
| 36 | 21 | 986 | 6.4 | 12 yearly | Yes | 60 | ..... | 50 | 50 | All raw | Dayton, Ohio. 36 |
| 37 | 29 | 1080 | 8.4 | 2 weekly | Yes | 50 | 50 | 50 | 50 | Not required | Des Moines, Iowa. 37 |
| 38 | 1 | 104 | 1.0 | Weekly | No | 50 | 50 | 50 | 50 | All raw | Duluth, Minn. 38 |
| 39 | 18 | N.S. | ..... | N.S. | No | 50 | 50 | 50 | 50 | All raw | Elizabeth, N. J. 39 |
| 40 | 4 | N.S. | ..... | 24 yearly | Yes | 50 | ..... | 50 | 50 | Not required | Erie, Pa. 40 |
| 41 | 54 | 191 | 1.5 | 4 yearly | No | 50 | 50 | 50 | 50 | (Physical only) | Fall River, Mass. 41 |
| 42 | 17 | 477 | 5.2 | Weekly | No | ..... | ..... | 60 | ..... | All | Flint, Mich. 42 |
| 43 | 5 | 100 | 0.9 | 24 yearly | No | 50 | 65 | 65 | 65 | All | Ft. Worth, Texas. 43 |
| 44 | 31 | 216 | 1.5 | N.S. | ..... | –60 | –60 | –60 | –60 | Grade A & Certified | Grand Rapids, Mich. 44 |
| 45 | 96 | 1957 | 14.1 | 24 yearly | No | 50 | 50 | 50 | 50 | Not required | Hartford, Conn. 45 |
| 46 | 5 | 238 | 1.7 | 2 weekly | No | 65 | N.S. | 50 | 65 | All raw | Houston, Texas. 46 |
| 47 | 8 | 694 | 7.6 | 12 yearly | Yes | 50 | 50 | 50 | 50 | All | Jacksonville, Fla. 47 |
| 48 | 10 | 58 | 0.5 | 12 yearly | Yes | 60 | 60 | 50 | 50 | All | Kansas City, Kan. 48 |
| 49 | 3 | N.S. | ..... | N.S. | N.S. | ..... | ..... | ..... | 60 | Not required | Lawrence, Mass. 49 |
| 50 | 32 | 185 | 0.8 | 12 yearly | Yes | ..... | ..... | 45 | ..... | Not required | Louisville, Ky. 50 |
| 51 | 99 | N.S. | ..... | Irregular | N.S. | 50 | 50 | 50 | 60 | Not required | Lowell, Mass. 51 |
| 52 | 1 | N.S. | ..... | N.S. | N.S. | N.S. | N.S. | N.S. | N.S. | Not required | Lynn, Mass. 52 |
| 53 | 4 | 74 | 0.4 | 24-36 yearly | Yes | 60 | 60 | 60 | 60 | All | Memphis, Tenn. 53 |
| 54 | 2 | 234 | 1.9 | Weekly | Yes | No | Require | ments. | | All | Nashville, Tenn. 54 |
| 55 | 77 | N.S. | ..... | N.S. | N.S. | N.S. | N.S. | N.S. | N.S. | Not required | New Bedford, Mass. 55 |
| 56 | 70 | 2778 | 17.0 | Annually | Yes | 50 | 50 | 50 | 50 | Not required | New Haven, Conn. 56 |
| 57 | 15 | N.S. | ..... | 12 yearly | Yes | 50 | 50 | 50 | 50 | All | Norfolk, Va. 57 |
| 58 | 13 | 1496 | 6.0 | Weekly | Yes | 65 | 65 | –50 | –50 | All raw | Oakland, Cal. 58 |
| 59 | 8 | 171 | 1.8 | 2 weekly | Yes | 70 | 70 | 55 | 55 | All raw | Oklahoma City, Okla. 59 |
| 60 | 107 | 786 | 4.0 | 12 yearly | Yes | 50 | 50 | 50 | 50 | All raw | Omaha, Neb. 60 |
| 61 | 26 | N.S. | ..... | N.S. | Yes | –50 | –50 | –50 | –50 | Grade A & Certified | Paterson, N. J. 61 |
| 62 | 80 | N.S. | ..... | Often | Yes | No | Require | ments. | | Not required. | Providence, R. I. 62 |
| 63 | 13 | 277 | 2.5 | 4 yearly | No | 60 | 60 | 60 | 60 | Not required | Reading, Pa. 63 |
| 64 | 2 | 50 | 0.2 | 12 yearly | Yes | 60-70 | 50 | 50 | 50 | Grade A raw | Richmond, Va. 64 |
| 65 | 17 | 996 | 8.4 | 12 yearly | Yes | 60 | 60 | 60 | 60 | All | Salt Lake City, Utah. 65 |
| 66 | 11 | 642 | 4.0 | Weekly | Yes | 70 | 70 | 70 | 70 | All | San Antonio, Texas. 66 |
| 67 | 4 | 723 | 9.6 | 4 yearly | Yes | 60 | 70 | 70 | 70 | All raw | San Diego, Cal. 67 |
| 68 | 33 | ..... | ..... | N.S. | No | 50 | ..... | 50 | ..... | All raw | Savannah, Ga. 68 |
| 69 | 54 | 312 | 3.5 | 12 yearly | No | 50 | 50 | 50 | 50 | Grade A | Schenectady N. Y. 69 |
| 70 | 9 | 2905 | 21.0 | 2 yearly | Yes | N.S. | N.S. | N.S. | 50 | Certified | Scranton, Pa. 70 |
| 71 | 19 | 149 | 1.6 | 12 yearly | No | 50 | 50 | 50 | 50 | N.S. | Somerville, Mass. 71 |
| 72 | 4 | 2630 | 25.2 | N.S. | No | 55 | 55 | 55 | 55 | All | Spokane, Wash. 72 |
| 73 | 52 | 510 | 3.9 | 12 yearly | No | 50 | 50 | 50 | 50 | Certified | Springfield, Mass. 73 |
| 74 | 6 | 236 | 1.0 | Weekly | Yes | 55 | 55 | 55 | 55 | All raw, ex. ret. prod. | St. Paul, Minn. 74 |
| 75 | 29 | 223 | 1.3 | Weekly | Yes | 50-60 | 50-60 | 50-60 | 50-60 | Cert. & Insp. | Syracuse, N. Y. 75 |
| 76 | 3 | N.S. | ..... | N.S. | No | N.S. | 60 | 60 | –60 | Not required | Tacoma, Wash. 76 |
| 77 | 21 | 1004 | 4.1 | Weekly | No | 65 | 65 | 50 | 65 | All raw | Toledo, Ohio. 77 |
| 78 | N.S. | 870 | 7.3 | 12 yearly | No | 50 | 50 | 50 | 50 | Not required | Trenton, N. J. 78 |
| 79 | 53 | 58 | 0.6 | 12 yearly | Yes | 50-60 | N.S. | 45-50 | ..... | Grade A raw & Cert. | Utica, N. Y. 79 |
| 80 | N.S. | 2061 | 1.8 | Weekly | No | No | Require | ments | | N.S. | Wilmington, Del. 80 |
| 81 | 100 | N.S. | ..... | N.S. | N.S. | N.S. | N.S. | N.S. | N.S. | Not required | Worcester, Mass. 81 |
| 82 | N.S. | N.S. | ..... | 12 yearly | Yes | 50 | 50 | 50 | 50 | Certified | Yonkers, N. Y. 82 |
| 83 | 11 | 494 | 3.7 | Constant | Yes | 65 | 65 | 65 | 65 | Not required | Youngstown, Ohio. 83 |

S—Salaries only. W—Whole Time. P—Part time. N.S.—Not Stated. 1—Includes Milk Depot Inspections.

## TABLE VIII—LABORATORY CONTROL, LEGAL CONTROL, AND PASTEURIZATION OF MILK IN EIGHTY-THREE CITIES, 1920

| | CITIES | LABORATORY CONTROL | | | | | | LEGAL CONTROL | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Frequency of Collection | | | | No. of Monthly Samples | | License | | | Prosecutions | | | |
| | | At Farms | In Transit | At Milk Depots | On Delivery Wagons | Tot. | Per 1000 Pop. | Fm. | Dlr. | No. Lic. Rev. 1920 | Conducted By | No. | No. Convicted | |
| | **Cities of over 500,000 Population.** | | | | | | | | | | | | | |
| 1 | Baltimore, Md | | | 5 weekly | Daily | 3000 | 4.1 | + | + | 13 | Health Dept | 39 | 39 | 1 |
| 2 | Boston, Mass | N.S. | N.S. | N.S. | N.S. | N.S. | .... | .... | + | .... | N.S. | .... | .... | 2 |
| 3 | Buffalo, N. Y | .... | .... | 3 yearly | 24 yearly | N.S. | .... | .... | + | N.S. | Corp. Counsel | N.S. | N.S. | 3 |
| 4 | Chicago, Ill | +[1] | 24 yearly | 24 yearly | Weekly | 2500 | 0.9 | .... | + | 8 | Health Dept | 196 | 119 | 4 |
| 5 | Cleveland, Ohio | .... | 2 yearly | 12 yearly | 12 yearly | 700 | 0.8 | .... | + | 188 | Police Court | 5 | 5 | 5 |
| 6 | Detroit, Mich | 2 yearly | .... | .... | Daily | 600 | 0.6 | .... | + | .... | Health Dept | 25 | 19 | 6 |
| 7 | Los Angeles, Cal | .... | Irreg. | Daily | 24 yearly | 1800 | 3.1 | N.S. | N.S. | N.S. | Health Dept | 54 | N.S. | 7 |
| 8 | New York, N. Y | .... | .... | 12 yearly | 12 yearly | 800 | 0.1 | .... | + | .... | Corp Counsel | N.S. | N.S. | 8 |
| 9 | Philadelphia, Pa | 12 yearly | 12 yearly | Irreg. | Daily | 8716 | 4.7 | + | + | 25 | City Attorney | 204 | 179 | 9 |
| 10 | Pittsburgh, Pa | .... | .... | Irreg. | Irreg. | 1500 | 2.5 | .... | + | .... | Health Dept | 25 | 25 | 10 |
| 11 | San Francisco, Cal | .... | Weekly | Weekly | Weekly | 80 | 0.1 | N.S. | N.S. | N.S. | Health Dept | N.S. | 38 | 11 |
| 12 | St. Louis, Mo | .... | .... | + | + | 700 | 0.9 | .... | + | 10 | City Attorney | 115 | 98 | 12 |
| | **Cities of 250,000 to 500,000 Population.** | | | | | | | | | | | | | |
| 13 | Cincinnati, Ohio | 2 yearly | .... | + | .... | N.S. | .... | + | + | 1642 | Health Dept | 72 | 72 | 13 |
| 14 | Denver, Colo | Yearly | Yearly | 12 yearly | + | 78 | 0.3 | + | + | 5 | Health Dept | 1 | 1 | 14 |
| 15 | Indianapolis, Ind | Irregular | .... | 12 yearly | 12 yearly | 300 | 0.9 | .... | + | .... | Health Dept | 8 | 8 | 15 |
| 16 | Jersey City, N. J | N.S. | N.S. | N.S. | N.S. | 1221 | 4.1 | + | + | 1 | Health Dept | 5738 | 573[5] | 16 |
| 17 | Kansas City, Mo | R.24, P.2 yrly | .... | Weekly | 24 yearly | 600 | 1.8 | + | + | N.S. | City Attorney | 44 | 44 | 17 |
| 18 | Milwaukee, Wis | Irregular | 3 yearly | Weekly | Weekly | 575 | 1.2 | .... | + | + | Health Dept | 57 | 57 | 18 |
| 19 | Minneapolis, Minn | Irregular | .... | .... | Constant | 200 | 0.5 | .... | + | 1 | Health Dept | 81 | 78 | 19 |
| 20 | Newark, N. J | .... | Irreg. | 4-6yearly | 6 yearly | 500 | 1.2 | N.S. | N.S. | N.S. | N.S. | N.S. | N.S. | 20 |
| 21 | New Orleans, La | Irregular | Daily | Daily | Daily | 600 | 1.5 | + | + | .... | Health Dept | 178 | 62 | 21 |
| 22 | Portland, Ore | .... | + | + | Often | 500 | 1.9 | N.S. | N.S. | N.S. | Health Dept | .... | .... | 22 |
| 23 | Rochester, N. Y | Irregular | 2 yearly | 2 yearly | 24 yearly | N.S. | .... | .... | + | .... | Health Dept | N.S. | N.S. | 23 |
| 24 | Seattle, Wash | Irregular | Irreg. | 12 yearly | 12 yearly | 260 | 0.8 | + | + | .... | City Attorney | N.S. | 24 | 24 |
| 25 | Washington, D. C | .... | .... | Daily | Daily | 688 | 1.5 | + | + | .... | Health Dept | 25 | 25 | 25 |
| | **Cities of less than 250,000 Population.** | | | | | | | | | | | | | |
| 26 | Akron, Ohio | .... | .... | .... | Weekly | 45 | 0.2 | .... | + | 1 | Health Dept | 5 | 5 | 26 |
| 27 | Albany, N. Y | On complaint | .... | 12 yearly | 12 yearly | 110 | 0.9 | .... | + | .... | Health Dept | 5 | 5 | 27 |
| 28 | Atlanta, Ga | Irregular | .... | 24 yearly | 12 yearly | 400 | 2.0 | + | + | .... | Health Dept | 33 | 29 | 28 |
| 29 | Birmingham, Ala | Irregular | .... | N.S. | N.S. | N.S. | .... | N.S. | N.S. | N.S. | N.S. | N.S. | N.S. | 29 |
| 30 | Bridgeport, Conn | 12 yearly | .... | Weekly | 12 yearly | 100 | 0.7 | .... | + | .... | City Attorney | .... | .... | 30 |
| 31 | Cambridge, Mass | N.S. | N.S. | + | + | 308 | 2.8 | .... | + | 1 | Health Dept | 12 | 12 | 31 |
| 32 | Camden, N. J | .... | .... | .... | .... | .... | .... | .... | + | .... | City Attorney | .... | .... | 32 |
| 33 | Canton, Ohio | .... | .... | .... | Yearly | 36 | 0.4 | .... | + | .... | City Attorney | 1 | 1 | 33 |
| 34 | Columbus, Ohio | .... | .... | 12 yearly | 12 yearly | 720 | 3.0 | + | N.S. | 93 | Health Dept | 2 | 2 | 34 |
| 35 | Dallas, Texas | .... | 12 yearly | Daily | 24 yearly | 500 | 3.1 | + | + | .... | City Attorney | 95 | 34 | 35 |
| 36 | Dayton, Ohio | .... | .... | .... | + | .... | .... | + | + | .... | City Court | 5 | 5 | 36 |
| 37 | Des Moines, Iowa | Irregular | .... | 12 yearly | 3 weekly | 48 | 0.3 | .... | + | .... | Health Dept | 3 | 3 | 37 |
| 38 | Duluth, Minn | .... | .... | + | + | 110 | 1.1 | + | + | N.S. | City Attorney | 9 | 9 | 38 |
| 39 | Elizabeth, N. J | Irregular | 12 yearly | Daily | Daily | 102 | 1.0 | .... | + | .... | Health Dept | 11 | 11 | 39 |
| 40 | Erie, Pa | .... | .... | .... | 24 yearly | 100 | 1.0 | .... | + | .... | Health Dept | 43 | 43 | 40 |
| 41 | Fall River, Mass | Irregular | N.S. | N.S. | N.S. | 181 | 1.5 | + | N.S. | .... | State Health Dept | 5 | 5 | 41 |
| 42 | Flint, Mich | + | + | .... | Weekly | 100 | 1.0 | + | + | 27 | Health Dept | .... | .... | 42 |
| 43 | Ft. Worth, Texas | .... | .... | 12 yearly | 12 yearly | 200 | 1.8 | + | + | .... | Corp. Counsel | .... | .... | 43 |
| 44 | Grand Rapids, Mich | .... | .... | .... | + | 280 | 2.0 | .... | + | .... | City Attorney | 5 | 5 | 44 |
| 45 | Hartford, Conn | .... | .... | 24 yearly | .... | 100 | 1.1 | .... | + | 2 | City Attorney | N.S. | 1 | 45 |
| 46 | Houston, Texas | .... | .... | Weekly | Weekly | 80 | 0.6 | + | + | .... | Cy. Atty. & Hlth. Dp. | 12 | 8 | 46 |
| 47 | Jacksonville, Fla | Irregular | 12 yearly | Weekly | 12 yearly | 180 | 1.9 | + | .... | 3 | Health Dept | 19 | 15 | 47 |
| 48 | Kansas City, Kan | .... | .... | 12 yearly | 12 yearly | 158 | 1.5 | .... | + | 1 | City Attorney | 21 | 9 | 48 |
| 49 | Lawrence, Mass | .... | .... | .... | .... | 183 | 1.9 | .... | + | .... | Health Dept | 5 | 5 | 49 |
| 50 | Louisville, Ky | .... | + | + | 12 yearly | 120 | 0.5 | .... | + | .... | Health Dept | 8 | 7 | 50 |
| 51 | Lowell, Mass | .... | N.S. | N.S. | 24 yearly | 300 | 2.6 | .... | + | 2 | Health Dept | 7 | 7 | 51 |
| 52 | Lynn, Mass | N.S. | N.S. | N.S. | Weekly | 188 | 1.8 | .... | + | .... | N.S. | 3 | 3 | 52 |
| 53 | Memphis, Tenn | Irregular | 12 yearly | Weekly | 12 yearly | 107 | 0.6 | + | + | 6 | Health Dept | 77 | 75 | 53 |
| 54 | Nashville, Tenn | .... | .... | Irreg. | 12 yearly | 130 | 1.1 | + | + | .... | Health Dept | 6 | 6 | 54 |
| 55 | New Bedford, Mass | .... | .... | .... | + | N.S. | .... | .... | + | + | Health Dept | 2 | 2 | 55 |
| 56 | New Haven, Conn | .... | .... | Monthly | Monthly | 250 | 1.5 | .... | + | .... | City Attorney | .... | .... | 56 |
| 57 | Norfolk, Va | Irregular | .... | Weekly | Weekly | 65 | 0.5 | + | + | .... | Health Dept | 2-3 | 2-3 | 57 |
| 58 | Oakland, Cal | 12 yearly | .... | Weekly | Irreg. | 250 | 1.1 | N.S. | N.S. | N.S. | Health Dept | N.S. | 20 | 58 |
| 59 | Oklahoma City, Okla | .... | .... | + | + | 25 | 0.2 | + | + | 42 | City Attorney | 36 | 34 | 59 |
| 60 | Omaha, Neb | Irregular | .... | Irreg. | Irreg. | 45 | 0.2 | + | + | 1 | Police Court | 56 | 44 | 60 |
| 61 | Paterson, N. J | On complaint | .... | N.S. | 2 weekly | 80 | 0.5 | .... | + | 1 | N.S. | .... | 1 | 61 |
| 62 | Providence, R. I | On request | 2-3weekly | N.S. | 12-24y'ly | 320 | 1.3 | .... | + | .... | Health Dept | 21 | 21 | 62 |
| 63 | Reading, Pa | .... | .... | 36 yearly | + | .... | .... | + | + | .... | City Attorney | 4 | 4 | 63 |
| 64 | Richmond, Va | .... | .... | 12 yearly | 12 yearly | 266 | 1.5 | + | + | 10 | City Attorney | .... | .... | 64 |
| 65 | Salt Lake City, Utah | 3 yearly | 2 yearly | 12 yearly | 12 yearly | 50 | 0.4 | .... | + | N.S. | City Attorney | .... | .... | 65 |
| 66 | San Antonio, Texas | .... | 12 yearly | Weekly | Weekly | 400 | 2.4 | + | + | .... | Health Dept | 12 | 12 | 66 |
| 67 | San Diego, Cal | 12 yearly | 12 yearly | Daily | 12 yearly | 1235 | 16.4 | N.S. | N.S. | N.S. | Health Dept | N.S. | N.S. | 67 |
| 68 | Savannah, Ga | Rarely | .... | Weekly | Weekly | 250 | 3.0 | .... | .... | .... | Health Dept | 125-30 | N.S. | 68 |
| 69 | Schenectady, N. Y | Irregular | Weekly | Weekly | Weekly | 135 | 1.5 | + | + | 19 | State | 6 | 6 | 69 |
| 70 | Scranton, Pa | .... | .... | N.S. | Weekly | 53 | 0.3 | .... | + | .... | Health Dept | 1 | 1 | 70 |
| 71 | Somerville, Mass | 12 yearly | 12 yearly | 12 yearly | 12 yearly | 265 | 2.8 | + | + | .... | N.S. | 4 | 4 | 71 |
| 72 | Spokane, Wash | Irregular | .... | Irreg. | + | N.S. | .... | .... | + | .... | Health Dept | 10 | 10 | 72 |
| 73 | Springfield, Mass | N.S. | + | + | 12 yearly | 181 | 1.3 | .... | + | .... | Health Dept | 3 | 3 | 73 |
| 74 | St. Paul, Minn | .... | .... | + | + | 12-30 | 0.1 | + | + | .... | City Attorney | 3 | 3 | 74 |
| 75 | Syracuse, N. Y | Irregular | Weekly | .... | 24 yearly | 275 | 1.6 | .... | + | 1 | Police Court | .... | .... | 75 |
| 76 | Tacoma, Wash | 12 yearly | 26 yearly | 26 yearly | 26 yearly | 100 | 1.0 | .... | + | 4 | City Attorney | 6 | 6 | 76 |
| 77 | Toledo, Ohio | .... | .... | 12 yearly | 26 yearly | 120 | 0.5 | .... | + | .... | Health Dept | 6 | 6 | 77 |
| 78 | Trenton, N. J | On complaint | .... | 12 yearly | 12 yearly | .... | .... | .... | + | .... | City Attorney | .... | 8 | 78 |
| 79 | Utica, N. Y | .... | .... | Weekly | Weekly | 60 | 0.5 | .... | + | N.S. | Corp. Counsel | N.S. | N.S. | 79 |
| 80 | Wilmington, Del | .... | .... | .... | .... | 83 | 0.7 | .... | + | N.S. | Health Dept | 2 | 2 | 80 |
| 81 | Worcester, Mass | N.S. | N.S. | N.S. | N.S. | 50 | 0.2 | N.S. | N.S. | .... | N.S. | .... | .... | 81 |
| 82 | Yonkers, N. Y | 12 yearly | 12 yearly | 12 yearly | 12 yearly | 192 | 1.9 | .... | + | .... | Corporation Counsel | 1 | 1 | 82 |
| 83 | Youngstown, Ohio | 1-2 yearly | 6 yearly | Weekly | 2-4weekly | 223 | 1.6 | + | .... | .... | Police Court | .... | .... | 83 |

N. S.—Not stated. [1]—Sediment. [2]—Raw above 60,000 per c.c.

## TABLE VIII—LABORATORY CONTROL, LEGAL CONTROL AND PASTEURIZATION OF MILK IN EIGHTY-THREE CITIES, 1920

| | PASTEURIZATION | | | | | | | Typhoid Deaths Per 100,000 Pop'n 1920 | CITIES | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Required For | Per Cent Supply Past. | Supervision | Holding System: Required | Holding System: Temperature | Holding System: Time Min. | Holding System: Recording Thermometer | | | |
| | | | | | | | | | **Cities of over 500,000 Population.** | |
| 1 | All but Selected raw | 95 | Inspection | + | 142-150 | 30 | + | 4.7 | Baltimore, Md. | 1 |
| 2 | N.S. | 92 | Inspection | + | 142-145 | 30 | + | 1.4 | Boston, Mass. | 2 |
| 3 | All but Cert. | 99 | Inspection | + | 142-147 | 30 | + | 5.0 | Buffalo, N. Y. | 3 |
| 4 | All but Cert. | 98 | Inspection | + | 145 | 30 | + | 1.1 | Chicago, Ill. | 4 |
| 5 | All but Cert. & A raw | 98 | Inspection | + | 140-146 | 30 | + | 3.2 | Cleveland, Ohio | 5 |
| 6 | All but Cert. & A raw | 98 | Inspection | + | 145-147 | 30 | + | 5.0 | Detroit, Mich. | 6 |
| 7 | All but T. B. test | 85 | Inspection | + | 143 | 25 | + | 2.6 | Los Angeles, Cal. | 7 |
| 8 | All but A raw | 98 | Inspection | + | 142 | 30 | + | 2.4 | New York, N. Y. | 8 |
| 9 | All but T. B. test | 95 | Inspection | + | 142-145 | 30 | + | 3.2 | Philadelphia, Pa. | 9 |
| 10 | All but Cert. | 95 | Inspection | | | | | 5.2 | Pittsburgh, Pa. | 10 |
| 11 | All but A raw | 100 | Inspection | | 140 | 20 | + | 3.1 | San Francisco, Cal. | 11 |
| 12 | | 93 | Inspection | + | 142-144 | 30 | + | 2.7 | St. Louis, Mo. | 12 |
| | | | | | | | | | **Cities of 250,000 to 500,000 Population.** | |
| 13 | All but Cert. & Inspt. | 98.4 | Inspection | + | 145 | 30 | + | 3.0 | Cincinnati, Ohio | 13 |
| 14 | | 40 | Inspection | | 145 | 30 | | 5.0 | Denver, Colo. | 14 |
| 15 | | 95 | Inspection | + | 145 | 30 | + | 6.2 | Indianapolis, Ind. | 15 |
| 16 | All but A and Cert. | 95 | Inspection | + | 140-43 | 15 | + | | Jersey City, N. J. | 16 |
| 17 | | 60 | Inspection | + | 142-45 | 20-30 | + | 7.6 | Kansas City, Mo. | 17 |
| 18 | All but Cert. & Inspt. | 93 | Inspection | | 145Hold160Flsk | 30 | + | 2.1 | Milwaukee, Wis. | 18 |
| 19 | | 95 | Inspection | + | 142-45 | 30 | + | 2.6 | Minneapolis, Minn. | 19 |
| 20 | All but T. B. test | 80 | Inspection | + | 145 | 30 | + | 1.9 | Newark, N. J. | 20 |
| 21 | | 30 | None | | None | | | 7.0 | New Orleans, La. | 21 |
| 22 | | 50 | Inspection | + | 142 | 30 | + | 3.4 | Portland, Ore. | 22 |
| 23 | | 40 | Inspection | + | 142-45 | 30 | + | 1.0 | Rochester, N. Y. | 23 |
| 24 | All but T. B. test | 88 | Charts | + | 145 | 25 | + | 1.9 | Seattle, Wash. | 24 |
| 25 | | 92 | Inspection | | | | | 6.5 | Washington, D. C. | 25 |
| | | | | | | | | | **Cities of less than 250,000 Population.** | |
| 26 | All but T. B. tested & that scoring under 80 | 99.5 | Inspection | + | 142 | 30 | | 3.7 | Akron, Ohio | 26 |
| 27 | Optional | 40-42 | Inspection | + | 142-45 | 30 | | 3.5 | Albany, N. Y. | 27 |
| 28 | Shipped Milk | 25 | Inspection | + | 142-46 | 30 | + | 12.8 | Atlanta, Ga. | 28 |
| 29 | All but Cert. & A raw | 16.7 | Insp. & Tests | + | 145 | 30 | + | 14.3 | Birmingham, Ala. | 29 |
| 30 | All but A raw | 85 | Temp. Records | + | 142-45 | 30 | + | 2.0 | Bridgeport, Conn. | 30 |
| 31 | | 75 | | | | | | 2.7 | Cambridge, Mass. | 31 |
| 32 | | N.S. | | | | | | | Camden, N. J. | 32 |
| 33 | All but T. B. test | 90 | Temp. Records | + | 145 | 30 | + | 2.5 | Canton, Ohio | 33 |
| 34 | All but T. B. test | 85 | Tests & Insp. | + | 142-45 | 30 | + | 4.5 | Columbus, Ohio | 34 |
| 35 | Milk over 100,000 | 60 | Inspection | + | 140-45 | 30 | + | 14.2 | Dallas, Texas | 35 |
| 36 | All but Cert. & raw above 60,000 per c. c. | 95 | Inspection | + | 145 | 30 | + | 7.1 | Dayton, Ohio | 36 |
| 37 | | 90 | Inspection | | 140 | 30 | | 2.3 | Des Moines, Iowa | 37 |
| 38 | | 45 | Inspection | + | 145 | 30 | + | 6.0 | Duluth, Minn. | 38 |
| 39 | | 81 | Inspection | + | 142-45 | 30 | + | 1.0 | Elizabeth, N. J. | 39 |
| 40 | | 80 | Inspection | + | 142 | 30 | + | 6.3 | Erie, Pa. | 40 |
| 41 | Milk over 200,000 per c.c. | 50 | Inspection | + | 146 | 30 | + | 5.0 | Fall River, Mass. | 41 |
| 42 | | 85 | Temp. Records | | | | | 16.0 | Flint, Mich. | 42 |
| 43 | | 75 | Inspection | + | 145 | 20 | + | 12.0 | Ft. Worth, Texas | 43 |
| 44 | Grade B | 90 | Inspection | + | 142 | 30 | + | 2.1 | Grand Rapids, Mich. | 44 |
| 45 | | 60 | Insp. & Tp. Rec | | 145 | 30 | + | 2.8 | Hartford, Conn. | 45 |
| 46 | | 50 | Inspection | + | 145 | 30 | + | 11.3 | Houston, Texas | 46 |
| 47 | Shipped Milk | 20 | Inspection | + | 140-45 | 20 | + | 7.5 | Jacksonville, Fla. | 47 |
| 48 | All below Grade A | 70 | Inspection | + | 140-45 | 25-30 | + | 3.9 | Kansas City, Kan. | 48 |
| 49 | | 75 | | + | 140-45 | 30 | + | 6.3 | Lawrence, Mass. | 49 |
| 50 | | 80 | Inspection | + | 142-45 | 30 | | 3.8 | Louisville, Ky. | 50 |
| 51 | | 34.2 | Inspection | + | 140-45 | 30 | + | 2.6 | Lowell, Mass. | 51 |
| 52 | | 90 | | + | N.S. | N.S. | + | | Lynn, Mass. | 52 |
| 53 | | 60 | Inspection | | 143-45 | 30 | + | 7.9 | Memphis, Tenn. | 53 |
| 54 | | 33 | Inspection | | 140 | 20 | | 9.2 | Nashville, Tenn. | 54 |
| 55 | | 70 | | | | | | 10.6 | New Bedford, Mass. | 55 |
| 56 | | 55 | Inspection | | 142 | 30 | + | 6.0 | New Haven, Conn. | 56 |
| 57 | Milk over 36 hrs. old | 25 | Charts | + | 145 | 30 | + | 3.4 | Norfolk, Va. | 57 |
| 58 | All but T. B. test | 90 | Charts | + | 143 | 35 | + | 3.1 | Oakland, Cal. | 58 |
| 59 | All but Inspected | 77 | Inspection | + | 145 | 20 | + | | Oklahoma City, Okla. | 59 |
| 60 | All but T. B. tested | 30 | Inspection | + | 145 | 20 | + | 7.6 | Omaha, Neb. | 60 |
| 61 | | | | | | | | | Paterson, N. J. | 61 |
| 62 | | 54 | Inspection | | | | | 3.8 | Providence, R. I. | 62 |
| 63 | | 75 | Inspection | | 142-45 | 30 | + | 5.5 | Reading, Pa. | 63 |
| 64 | Grade B | 92 | Inspection | + | 145 | 30 | + | 6.3 | Richmond, Va. | 64 |
| 65 | | 75 | | + | 140 | 20 | + | 6.0 | Salt Lake City, Utah | 65 |
| 66 | Milk not Prod. by Disp. | 67 | Inspection | + | 145 | 30 | + | 9.7 | San Antonio, Texas | 66 |
| 67 | All but T. B. test | 25 | Inspection | + | 140 | 30 | + | 3.9 | San Diego, Cal. | 67 |
| 68 | | | | | | | | 11.9 | Savannah, Ga. | 68 |
| 69 | | 35 | Inspection | + | 142-45 | 30 | + | 7.9 | Schenectady, N. Y. | 69 |
| 70 | All but Cert. | 99 | Inspection | + | 145 | 30 | + | 1.4 | Scranton, Pa. | 70 |
| 71 | | 90 | Inspection | + | 145 | 30 | + | 3.1 | Somerville, Mass. | 71 |
| 72 | | 75 | Temp. Records | + | 145 | 20 | + | 6.7 | Spokane, Wash. | 72 |
| 73 | | 97 | Inspection | + | 140-45 | 30 | + | 4.5 | Springfield, Mass. | 73 |
| 74 | All but retail prod. | 66 | Inspection | + | 145 | 30 | + | 2.1 | St. Paul, Minn. | 74 |
| 75 | | 66.7 | Inspection | + | N.S. | N.S. | + | 4.0 | Syracuse, N. Y. | 75 |
| 76 | All but T. B. tested | 60 | Inspection | + | 145 | 30 | + | 1.0 | Tacoma, Wash. | 76 |
| 77 | | 90 | Temp. Records | + | 142-45 | 30 | + | 7.2 | Toledo, Ohio | 77 |
| 78 | | 60 | Inspection | + | 145 | 30 | + | 5.0 | Trenton, N. J. | 78 |
| 79 | | | Inspection | + | 142-45 | 30 | + | 1.0 | Utica, N. Y. | 79 |
| 80 | All but T. B. test | N.S. | Inspection | | 145 | 30 | | 13.5 | Wilmington, Del. | 80 |
| 81 | N.S. | 42 | Inspection | + | 140-45 | 30 | + | 1.6 | Worcester, Mass. | 81 |
| 82 | | 90 | Inspection | + | 142-45 | 30 | + | | Yonkers, N. Y. | 82 |
| 83 | | 95 | Inspection | + | 140-45 | 30 | + | 6.6 | Youngstown, Ohio | 83 |

N.S.—Not stated.

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 82 Yonkers, N. Y. | 12 yearly | 12 yearly | 12 yearly | 12 yearly | 192 | 1.9 | .... | + | .... | Corporation Counsel. | 1 | 1 | 82 |
| 83 Youngstown, Ohio | 1-2 yearly | 6 yearly | Weekly | 2-4weekly | 223 | 1.6 | + | .... | .... | Police Court. | .... | .... | 83 |

N. S.—Not stated. 1—Sediment. 2—Raw above 60,000 per c.c. Page 588



of the third group have milk commissions.

The number of farms producing certified milk varies inversely with the size of the population group. The number of farms per 100,000 population is 0.5 for the first group, 0.7 for the second group and 1 for the third group. However, there is more certified milk consumed per capita in the larger than in the smaller cities. In the cities of 500,000 and over the daily consumption of certified milk is 57.3 quarts per 10,000 population. In the cities from 500,000 to 250,000, 46.4 quarts of certified milk per 10,000 population are used, and in the cities of 250,000 and under, this figure is only 28 quarts. An average of 50 quarts per day per 10,000 population for the 45 cities receiving certified milk is reported.

## SUMMARY AND CONCLUSIONS

1. Organization. The sanitary supervision of milk supply is in general carried on in the larger cities as a part of the work of the division of foods, while in the smaller cities it is handled by the health officer himself or by a subordinate director responsible to him. Both of these plans seem to be generally satisfactory for cities respectively of over and under 140,000 population.

2. The licensing of milk dealers is a fundamental essential in the successful control of the milk problem. Whether farms shall also be licensed by the city is of secondary importance, as they can easily be indirectly controlled through the licensing of milk dealers. The licensing of milk dealers is practically universal in the group of cities studied.

3. The usual practice appears to be to employ between one and two inspectors per 100,000 population for the supervision of sanitary conditions at farms and dairies. Such a personnel should make possible inspection of each farm once or twice a year. The standard score cards of the U. S. Department of Agriculture are generally used for the purpose of recording the results of farm inspection.

4. For the supervision of the health of the dairy cattle one veterinarian on full time is usually provided for a population of from 300,000 to 600,000.

5. Temperature regulations are usually enforced at farms, in transit, at milk depots, and in delivery wagons. The limits set generally vary from 50° to 55° F.

6. Laboratory control is exercised in practically all cities, and is of obvious and fundamental importance. The samples examined average between 130 and 140 per 100,000 population.

7. The foundation stone of efficient control of the milk situation is a system of grading based on dairy scores and bacterial counts. It is surprising and disappointing to find that only 31 of the 83 cities studied report the use of a grading system, and among these 31 there is little uniformity as to requirements. The adoption of such standard systems of grading milk as have been suggested by the National Commission on Milk Standards would seem to be one of the most urgent steps to be taken in this field in the future.

8. The next step after the introduction of a grading system should be to secure the pasteurization of all milk below the generally accepted standards of Grade A Raw. This sort of regulation is in force in the large cities studied in our survey; in our second, and third groups of cities less than half have such a regulation; and in the third group of the small cities only 9 per cent of the cities pasteurized 95 per cent or more of their total milk supply. Since pasteurization offers the only possible safeguard for milk that is not produced under ideal conditions and from tuberculin-tested cattle, it seems most important that official regulation

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 95 | Inspection | + | 140–45 | 30 | + | 6.6 | Youngstown, Ohio..... 83 |

N.S.—Not stated.





should conform to sanitary knowledge more completely than is the case at present. With the regulation requiring the pasteurization of all milk not of Grade A Raw quality should, of course, come a stringent definition of pasteurization and a thorough system of inspection of pasteurizing plants. Systems of this kind are in force in 12 of the cities studied in this survey.

9. That portion of the milk supply which is not efficiently pasteurized by the holding system should be protected by the tuberculin testing of cattle and by a system of medical inspection of milk handlers. Thirty-nine cities ostensibly require the tuberculin testing of all herds from which raw milk is sold, but the actual enforcement of this regulation is very doubtful. Medical inspection of milk handlers is ostensibly carried out by 17 cities, but here too the completeness of enforcement leaves much to be desired.

10. In addition to the protection of the great mass of the milk supply by grading and pasteurization, it is highly desirable that a small amount of very high grade raw milk should be available, such as is provided through the activities of certified milk commissions. It is encouraging to note that 46 of the cities studied have milk commissions, but the amount of milk produced is, as must always be the case, exceedingly small, amounting to perhaps 500 quarts per day as against the total milk supply of 33,000 quarts per 100,000 population.

11. The amount of money spent for milk control averages a little over $.04 per capita, varying from $.01 to $.13. Even with the development of an adequate system of grading and pasteurization, we are not inclined to believe that the cost of milk control need increase very greatly, since the careful supervision of pasteurizing plants will obviate the necessity of over-frequent farm inspections. We are inclined to believe too that the figure of $.05 per capita would probably cover this phase of health department work.

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# REPORT OF THE COMMITTEE ON PROBLEMS OF CANNING

Read before the Food and Drugs Section of the American Public Health Association at the Fiftieth Annual Meeting, New York City, November 15, 1921, and adopted by vote of the Section.

THE work of the year marks substantial progress in the technology of canned foods and in our knowledge of the product. Much has been done in extending information in the industry relating to the details of manufacture. The old order in which the processing of canned foods was a matter of formula followed blindly is being replaced by a scientific knowledge of the principles of processing. The superintendents and responsible workmen are making commendable progress, shown by the intelligence with which their work is done. Until recently canning processes have depended entirely on the experience of practical workers. The time and temperature of sterilization which in their experience yielded products that would not spoil were regarded as sufficient. A systematic study of the requirements of time and temperature had not been made. At the present time a systematic series of processing studies is being conducted by the Research Laboratory of the National Canners Association, and material contributions to the information on the subject are being made by other laboratories.

In August, 1920, a bulletin on heat penetration was published by the Research Laboratory of the National Canners Association, and since that time the work has been materially extended by the study of the heat penetration of additional products, and of the same products under additional conditions. During the present year a bulletin on the same subject, but relating especially to home canning, was published by Magoon and Culpepper (Bulletin 956, U. S. Dept. of Agriculture). These bulletins are being closely studied by commercial canners and also by home canners.

In order to utilize the results of such investigations it is necessary to know in detail the heat resistance of bacterial spores. Articles on this subject have been published in the *Journal of Infectious Diseases* by Bigelow and Esty with regard to typical thermophilic organisms to which the spoilage of canned corn is largely due, and by Weiss relating to the spores of *B. botulinus*. The influence of acidity on the heat resistance of bacterial spores was discussed in the articles just mentioned, and a bulletin was published by the Research laboratory, National Canners Association, giving the hydrogen ion concentration of the juices of canned foods and showing the influence of the sterilizing process on the hydrogen ion concentration of typical canned foods. These results are being correlated with each other and a formula has been developed with which it is possible to calculate the theoretical time required in canning a particular food to destroy the spores of an organism of known heat resistance, processing at specified temperature. With this formula theoretical processes are being calculated which will make possible a systematic study of processing.

Manufacturers of evaporated milk have found it difficult to judge of the suitability of milk for evaporation from the results of preliminary examination. They ordinarily make their judgment by smelling the milk and by a quick test of its acidity. It has been pointed out by several writers that there are factors other than acidity, as for instance the thickening when heated to a high temperature and the character of the precipitate formed on the addition of alcohol. Rogers and his coworkers have studied a form of thickening in evaporated milk which simulates thickening caused by some forms of spoilage but is due to other causes relating probably to the composition of milk.

The progress which has been made in the spread of information regarding the technology of canning is not represented by publications. It has been accomplished mostly by correspondence and personal conferences within the industry. A number of publications have been issued on the subject. For instance, Dill of the Bureau of Chemistry has published a number of articles relating to the technology of canning and preserving fish. Hunter of the Bureau of Chemistry and Fellers of the National Canners Association have made substantial contributions to our knowledge of the bacteriology of salmon. Cruess has published several articles relating to the technology of the canning of fruits, with particular reference to olives.

During the last year material contributions have been made to our knowledge of vitamines as applied to canned foods. Writers discussing this subject in the past have been at the disadvantage of lacking information regarding vitamines or regarding canning processes, or both. As a result many of the comments that have been published regarding the influence of the canning process on the vitamine content of food are erroneous. During the last year some work has been done with special reference to canned foods, and numerous studies have been made of the influence of heat and oxidation on vitamines, and the results obtained may be applied to canned foods.

Several articles have been published during the year by different workers showing that the resistance of all three vitamines to heat is much greater than has been generally supposed. It has also been shown that much of the destructive action formerly attributed to heat is due to oxidation. It has been shown that vitamines A and B are not destroyed to an appreciable extent when given a more severe heat treatment than is practiced in canning foods, and that even vitamine C withstands a greater amount of heat than had been formerly supposed. With canned tomatoes, for instance, the antiscorbutic vitamine content is almost unimpaired. Much work on this subject remains to be done. Our knowledge of the quantitative occurrence of vitamines is fragmentary at best, and a comparative study of the amount of vitamines in the raw product, and the same product after being cooked in a fresh state for the table, and after being canned has not been made.

In discussing the progress that has been made in the canning industry during the year just past, as for several years previously, special mention should be made of the studies on the subject of food poisoning. These do not refer to canned foods especially; in fact, it has been amply demonstrated that food poisoning from all sources is far less frequent than is usually supposed even by the medical profession, and that canned foods are only responsible for a small percentage of the cases of real food poisoning that occur.

The canning industry has thought it wise, however, to contribute to the scientific work of the day the expense of a systematic study of all types of food poisoning. The progress made by Rosenau and his associates on the general subject of food poisoning has been referred to in previous reports of this Committee. For something like two years an intensive study of botulism has been made in two sections of the country. Rosenau and his associates are conducting an investigation on this subject in Harvard Medical School, and on the Pacific Coast a commission consisting of Meyer and Dickson of the University of California and Leland Stanford University, respectively, and Geiger of the U. S. Public Health Service are conducting a study of B. botulinus.

Numerous articles have been published from all institutions represented, and an extensive publication regarding the etiology of botulism by the Botulinus Commission, just referred to, has been prepared and will shortly be published in the *Journal of Infectious Diseases*. The publicity given the few outbreaks of botulism produced by canned foods has created a much exaggerated impression regarding the prevalence and danger of this form of poisoning. As compared with many other diseases the number of cases of botulism has been insignificant. Moreover, the outbreaks that have occurred have been due to food canned in the home to a much greater extent than the commercially canned product. Notwithstanding this fact, the importance of obtaining further information regarding the treatment of the disease, and information which may make it possible to entirely safeguard canned foods, whether prepared commercially or in the home, is fully recognized by the canning industry as well as by the appropriate government organizations. Thom and his associates in the Bureau of Chemistry have published a number of articles on the subject. The U. S. Public Health Service has also been active, and the California State Board of Health has given the matter careful attention.

W. D. BIGELOW, *Chairman.*
ALBERT C. HUNTER.
GEORGE A. MENGE.
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# RESULTS OF A HEALTH PROGRAM IN A SUMMER PLAY SCHOOL

HENRY HARAP
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EVERY summer the public-school systems of the great cities dismiss the children of their congested districts for ten weeks, to pursue what random occupations a tenement district offers. The Hudson Guild Play School was established to direct the physical and moral development of a limited group of children during the summer vacation. Because the school could accommodate only a small group, physically underdeveloped children were selected. Health improvement of the group was the most important aim, although considerable attention was given to moral improvement.

## THE CHILDREN

One hundred ten children were selected on the recommendation of a doctor who examined 250 children. Twenty-eight of these were fatherless and 26 motherless; the mothers of thirty of the children worked in factories or homes. The average family consisted of five persons. Forty-three children were of Irish parentage, 28 of Italian, and the remainder of French, Spanish, German, Polish and Russian parentage. Two-thirds of the fathers were unskilled laborers. Of these, 30 per cent were longshoremen, and the rest were day laborers, truck drivers and iron workers. The skilled workers were chiefly carpenters and barbers.

As to general appearance, our children as a whole when they first came to us were rated 6.9 by our nurse, 10 being the maximum rating. In other words, at the beginning of the Play School season, the appearance of our children was barely fair. We observed the grossest absurdities in dress. We found children with winter underwear, warm shirts and trousers, long winter stockings which were held up by tightly bound strings or rubber bands, and heavy shoes. We inferred that many of the mothers of our children were not inclined, or were not able, to give much time to frequent and thorough laundering, particularly of undergarments; that the supply of wearing apparel was not sufficient to allow for necessary changes of undergarments, waists, dresses and stockings. We noticed that the use of clean handkerchiefs and towels was not common.

Intellectually, our children comprised a fairly normal group. Of the 46 children tested by the Standard Revision of the Binet-Simon test, we found 6 bright children, 25 normal children, 13 backward children, 4 on the borderline between backwardness and feeblemindedness, and one probably feebleminded.

The interests of our children were those customary to the tenement district child, viz., cheap movies, street and seasonal games, the candy store, petty gambling, household chores, the public park, and the waterfront. Most of the children attend the public schools, but some attend the parochial schools of the Catholic church.

The medical examination previous to admission of the children gave us information concerning the physical condition of our group. We found that the average child was 4.66 pounds below the normal weight for his age and height. Seventy-four per cent were below the normal weight for their age and height. Eight children were more than 10 pounds under weight. The average rating of our group, as taken from the doctor's diagnosis of the general condition of the children, was 7.2, 10 being the maximum; or about 7 per cent below the normal general condition of health. Fifty per cent were rated below normal; 40 per cent were normal; and 10 per cent were above

normal in general condition. A summary of the physical defects is as follows: Sixty-one per cent were in need of dental treatment; 37 per cent required treatment for enlarged tonsils and adenoids; 11 per cent had physical deformities; 5 per cent had skin defects.

The children attended the Play School from 9 a. m. to 4:30 p. m. for 39 days, beginning July 6 and ending August 27. The daily program consisted of manual and physical activities, a lunch period, a rest period, a milk period, a shower bath, and a library period. The activities included sewing, knitting, clay modeling, dramatics, dancing, cobbling, carpentry, games, physical exercise, choral singing, health instruction, outings, movie entertainments, savings bank, and a morning assembly conducted entirely by the children.

### THE HEALTH PROGRAM

The poor physical condition of our group required a special health program. Every child was subjected to a physical examination at the beginning and end of the Play School term. Every group was weighed once every week. Interest in increasing weight was stimulated by the nurse, and, as the season progressed, by announcements of gain or loss in weight. The children were inspected by the nurse every morning, a record being made of general appearance on a basis of 10 points. These records were used to stimulate improvement. The physical defects discovered by medical examination were brought to the attention of parents and in numerous cases steps were taken to correct the defects. Defects of the teeth were treated in our own dental clinic, which handled 63 cases.

A smooth and effective undercurrent of health information and practice ran through all the children's occupations. In the assembly we had several five-minute talks by the nurse. Incidental references to hygiene and clothing were made by the teachers. The nature of the breathing process was discussed in relation to singing and to health. The washing period before lunch and the resting period after lunch were object lessons in themselves. The program of physical exercise, play and games was the most important element in incidental health instruction. In the carpentry shop, tooth-brush holders, medicine cabinets and towel racks were made, with a view to home use. In the library, books on hygiene and sanitation were placed within reach of the children. The duties of the sanitary officers and the incidental cleaning, brushing and mopping which the children were called upon to do were practical lessons in cleanliness.

In the sewing and knitting classes, handkerchiefs, sweaters, middies, and bloomers were made with a view to contributing to the personal health of the children. The children acted out health situations in connection with dramatics. The work of cobbling shoes emphasized keeping the feet dry and protecting them from cuts and bruises.

The school lunch, which was prepared by an expert dietitian, consisted of vegetables, bread and butter, dessert, and milk. Special assistants paid attention to the formation of proper eating habits. Ten minutes were set aside for washing hands before the lunch period. In the middle of the afternoon every child had a cup of milk and a slice of bread. The daily bath was a practical lesson in health and cleanliness.

The effect of our health program was studied in terms of the measures of (1) general appearance, (2) physical condition, and (3) weight at the beginning and end of the Play School term. A small control group brought out our results more sharply. The data follows:

### GENERAL APPEARANCE

In general appearance, our children showed an improvement of 20 per cent over their initial condition. This was to be expected in view of the daily inspections, the health instruction, and the gen-

eral emphasis on health and cleanliness.

Table I shows the distribution of nurse's inspection ratings and the gains The average initial rating was 6.93, the average deviation from the average being 1.11. The average gain was 1.38, the average deviatoin from the average being 1.3. The apparent discrepancy between the average gain as shown in the table of gains and the difference between the average initial and the average final rating is due to the fact that some children were not inspected either at the beginning or at the end of the Play School term.

TABLE I

NURSE'S INSPECTION RATINGS

| Rating | Initial rating Number of children | Final rating Number of children |
|---|---|---|
| 5 to 6 | 33 | 7 |
| 6.1 to 7 | 32 | 17 |
| 7.1 to 8 | 23 | 27 |
| 8.1 to 9 | 15 | 26 |
| 9.1 to 10 | 7 | 27 |
| | 110 | 114 |

| | |
|---|---|
| Average initial rating | 6.93 |
| Av. dev. from average | 1.11 |
| Average final rating | 8.3 |
| Av. dev. from average | 1.1 |

IMPROVEMENT

| Gain in points | Number of children |
|---|---|
| -3 to-2 | 2 |
| -1.9 to-1 | 5 |
| -.9 to 0 | 13 |
| 0 to 1 | 16 |
| 1.1 to 2 | 26 |
| 2.1 to 3 | 21 |
| 3.1 to 4 | 9 |
| 4.1 to 5 | 3 |
| | 95 |

| | |
|---|---|
| Average gain | 1.38 |
| Av. dev. from average | 1.3 |

PHYSICAL CONDITION

At the beginning of the Play School term 50 per cent of the children were below normal; 40 per cent were normal, and 10 per cent were above normal. At the end of the Play School term 30 per cent of the children were below normal; 46 per cent were normal, and 24 per cent were above normal. The average improvement of our children was 18 per cent. A special case will illustrate the degree of improvement. On June 12 Susie Martino was rated 6 by our doctor; on July 26 she was rated 8, and on August 26 she was rated 9. In this case, which, of course, was exceptional, the child developed from a decidedly subnormal condition to a decidedly supernormal condition. The explanation of this is the story of the Play School.

Table II shows the distribution of the doctor's ratings of general condition at the beginning and at the end of the Play School term. The distribution of gains is also given. The average initial rating was 7.2, the average deviation from the average being 1.12. The average final rating was 7.94, the average deviation from the average being .62. The average gain was 1.28. The average number of points below normal at the beginning of the Play School term was .55 or 7 per cent. The average number of points below normal at the end of the Play School term .19 or 3 per cent.

TABLE II

DOCTOR'S RATING OF GENERAL CONDITION

| Rating | First examinat'n Number of children | Final examinat'n Number of children |
|---|---|---|
| 5 | 6 | 0 |
| 6 | 10 | 3 |
| 7 | 27 | 22 |
| 8 | 35 | 39 |
| 9 | 8 | 19 |
| 10 | 2 | 2 |
| | 88 | 85 |

IMPROVEMENT

| Gain in points | Number of children |
|---|---|
| -1 | 8 |
| 0 | 20 |
| 1 | 25 |
| 2 | 14 |
| 3 | 2 |
| | 69 |

| | |
|---|---|
| Average initial rating | 7.2 |
| Average dev. from average | 1.12 |
| Average final rating | 7.94 |
| Average dev. from average | .62 |
| Average gain | 1.28 |
| Average dev. from average | .65 |
| Average gain over initial rating | 18% |
| Average number of points below normal at beginning | .55 or 7% |
| Average number of points above normal at end | .19 or 3% |

| | Initial exam. | Final exam. |
|---|---|---|
| Below normal ..... | 50% | 30% |
| Normal ..... | 40% | 46% |
| Above normal ..... | 10% | 24% |

NOTE: The normal condition is 7.75. Not all children examined at the beginning of Play School were examined at the end, and vice versa. This accounts for the difference in totals.

WEIGHT

It is significant that four-fifths of our children gained weight, each child in this group gaining nearly two pounds. This gain did not bring the children to the normal standard for their age and height, which indicates that the children are in need of further physical attention.

TABLE III

| Deviation from normal in pounds | Initial weight Number of children | Final weight Number of children |
|---|---|---|
| -18 to -15 | 1 | 0 |
| -14.9 to -12 | 2 | 1 |
| -11.9 to -9 | 5 | 2 |
| -8.9 to 6-6 | 21 | 12 |
| -5.9 to -3 | 30 | 17 |
| -2.9 to 0 | 22 | 21 |
| 0 to 3 | 18 | 21 |
| 3.1 to 6 | 3 | 5 |
| 6.1 to 9 | 2 | 0 |
| 9.1 to 12 | .. | 1 |
| | 104 | 80 |

IMPROVEMENT

| Gain in pounds | Number of children |
|---|---|
| -2 to-1 | 2 |
| .9 to 0 | 6 |
| 0 | 8 |
| 0 to 1 | 24 |
| 1.1 to 2 | 28 |
| 2.1 to 3 | 10 |
| 3.1 to 4 | 6 |
| 4.1 to 5 | 2 |
| | 86 |

| | |
|---|---|
| Average number of pounds below normal at beginning of Play School.... | 4.66 |
| Average deviation from the average... | 2.75 |
| Average number of pounds below normal at end of Play School..... | 2.24 |
| Average deviation from the average.. | 3.27 |
| Average gain ..... | 1.33 |

82% of the children gained; 9% remained the same; 9% lost weight.

| | Initial weight | Final weight |
|---|---|---|
| Below normal ..... | 74% | 64% |
| Above normal ..... | 26% | 36% |

NOTE: Not all children weighed at the beginning were weighed at the end of the Play School term. The gain is calculated for children who were weighed both at the beginning and end only.

Table III gives the distribution of the number of pounds above or below the normal weight at the beginning and at the end of the Play School term. The normal weights were derived from Dr. F. D. Wood's weight table. The distribution of gains is also given. The average number of pounds below normal for each child at the beginning of the Play School term was 4.66, the average deviation from the average being 2.75. The average number of pounds below normal at the end of the Play School term was 2.24, the average deviation from the average being 2.27. The average gain per child was 1.33 pounds, the average deviation from the average being .66. At the beginning of the Play School term 26 per cent of the children were above the normal weight, the average being 2.4 pounds above normal; 74 per cent were below normal weight, the average being 5 pounds below normal. At the end of the Play School term 36 per cent of the children were above normal weight, and 64 per cent were below normal weight. Nine per cent of the children lost weight; 9 per cent remained the same; 82 per cent gained.

CONTROL GROUP

Several of our children were examined before July 6, the opening of the Play School, and were not admitted. Fortunately several of these children were re-examined by the same doctor for another purpose during the month of August. This made it possible for us to compare the physical changes of non-Play School children with those of the Play School children. This control group is very small, but it is our only means of checking up our results and we use the data with apology.

CONTROL GROUP: GENERAL CONDITION

Table IV shows the distribution of the initial and final ratings of general condition of the control group. The doctor's average initial rating of general condition was 8.25, the average deviation from the average being .6. The average final rat-

ing was 7.7. The average deviation from the average being .7. The average loss in general condition was .55 points, the average deviation from the average being .73. Here again the general condition of the children who were not admitted to the Play School showed a deterioration while the Play School children showed an improvement.

TABLE IV

CONTROL GROUP: DOCTOR'S RATING OF GENERAL CONDITION

| Rating | Initial examinat'n Number of children | Final examinat'n Number of children |
|---|---|---|
| 7 | 1 | 5 |
| 7.5 | 1 | 0 |
| 8 | 4 | 3 |
| 9 | 4 | 2 |
| | 10 | 10 |

IMPROVEMENT

| Gain in points | Number of children |
|---|---|
| -2 | 1 |
| -1 | 4 |
| .5 | 1 |
| 0 | 3 |
| 1 | 1 |

| | |
|---|---|
| Average initial rating | 8.25 |
| Average dev. from average | .6 |
| Average final rating | 7.7 |
| Average dev. from average | .7 |
| Average loss | .55 |
| Average dev. from average | .73 |

CONTROL GROUP: WEIGHT

Table V shows the distribution of the initial and final weight of the control group. The average number of pounds below normal on July 2 was 5.1, the average number of pounds below normal on August 15 was 4.8, the average deviation from the average of the former being 3.7 and of the latter .4. This small group suffered a loss in weight of .3 of a pound, while our Play School group enjoyed a gain in weight of 1.33 pounds.

TABLE V

CONTROL GROUP WEIGHT

| Deviation from normal in pounds | Initial weight Number of children | Final weight Number of children |
|---|---|---|
| -15 to -12 | 1 | 1 |
| -11.9 to -9 | 1 | 1 |
| -8.9 to -6 | 2 | 2 |
| -5.9 to 3 | 1 | 1 |
| -2.9 to 0 | 2 | 2 |
| 0 to +3 | 1 | 1 |
| | 8 | 8 |

IMPROVEMENT

| Gain in pounds | Number of children |
|---|---|
| -1 to 0 | 4 |
| 0 | 4 |
| | 8 |

| | |
|---|---|
| Average number of pounds below normal at beginning of Play School | 5.1 |
| Average deviation from average | 3.7 |
| Average number of pounds below normal at end of Play School | 4.9 |
| Average deviation from average | 3.9 |
| Average pounds gain | .2 |

We have attempted to present a brief statement of the physical needs of a group of tenement children, a health program during the summer months to meet these needs, and the results of such a program. The results indicate the possibilities of utilizing the vacation months for health improvement of city children.

**How Does Your City Stand on These?**

Does your city health work need to be reorganized?

Is it the practice in your city to destroy school books and supplies furnished at public expense and used by pupils with contagious disease?

Is your city effectively regulating soft-drink places?

Have you taken cognizance of the fact that adequate filtration and sterilization of your water-supply is necessary to protect public health?

These questions are asked by the *American City*, April, 1922, pp. 308-9.

# A NEW VENTURE IN SCHOOL MEDICAL INSPECTION

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Abstracted from paper read before the Joint Meeting of the Public Health Administration and Child Hygiene Sections of the American Public Health Association at Fiftieth Annual Meeting, New York City, November 18, 1921.

SCHOOL medical inspection and nursing service in Detroit are under the supervision of the Department of Health.

The old time plan of part-time physicians making inspections was unsatisfactory in a number of particulars. Compensation was insufficient to excite the desired interest. Defects were not reported in a uniform manner. Supervision and checking of work was most difficult.

The primary object of school medical inspection is to find and overcome physical defects as early in the school life of the child as possible. The inspection of the entire school population annually is a task of such magnitude that it is rare to find a city where this is adequately done. Detroit has concentrated attention on the first-grade and special cases from other grades.

At present Detroit is testing out the plan of having the teachers make preliminary examinations of the pupils, school medical inspectors checking only those referred to them, with no intention of converting teachers into physicians, but simply giving them the chance to acquire the information about children's health which an intelligent mother should have. In 1921 there were 60 nurses available, allowing one nurse to 2,500 pupils. Under the new system vaccination and diphtheria immunization are in the hands of four men specializing on this work, while disease diagnosis is in charge of eight men assigned to districts. Suspicious cases of disease are referred by nurses to the main office, and thence they are given out to the proper district physician. Examinations of physical defects are carried out by twelve men who work in teams of three, each team being assigned to a district. Diagnosticians fit their work in with their private work, and vaccinators and physical examiners give half time, that is, from 8:30 to 11:30 each day.

There is no physician attached to a school; the clinics are conducted by the nurses; suspicious cases are excluded on nurses' recommendations, and diagnosticians notified. In visiting the homes diagnosticians find some minor afflictions, not communicable, but there is no indication that the nurses are missing any true cases of contagion.

A graded scale is used in marking defects. The marking of tonsils is done according to the following instructions:

00—Tonsils have been removed, the base of the tonsil bed is smooth, shows no tonsil, and child knows that it has been removed.

0—Normal, tonsil even with its adjacent pillar, or distinctly behind it.

1—Slightly enlarged or protruding slightly from its surrounding bed.

2X—Tonsil large enough to reach half way across the middle line of the mouth.

3X—Tonsil touching or almost touching its fellow on the opposite side.

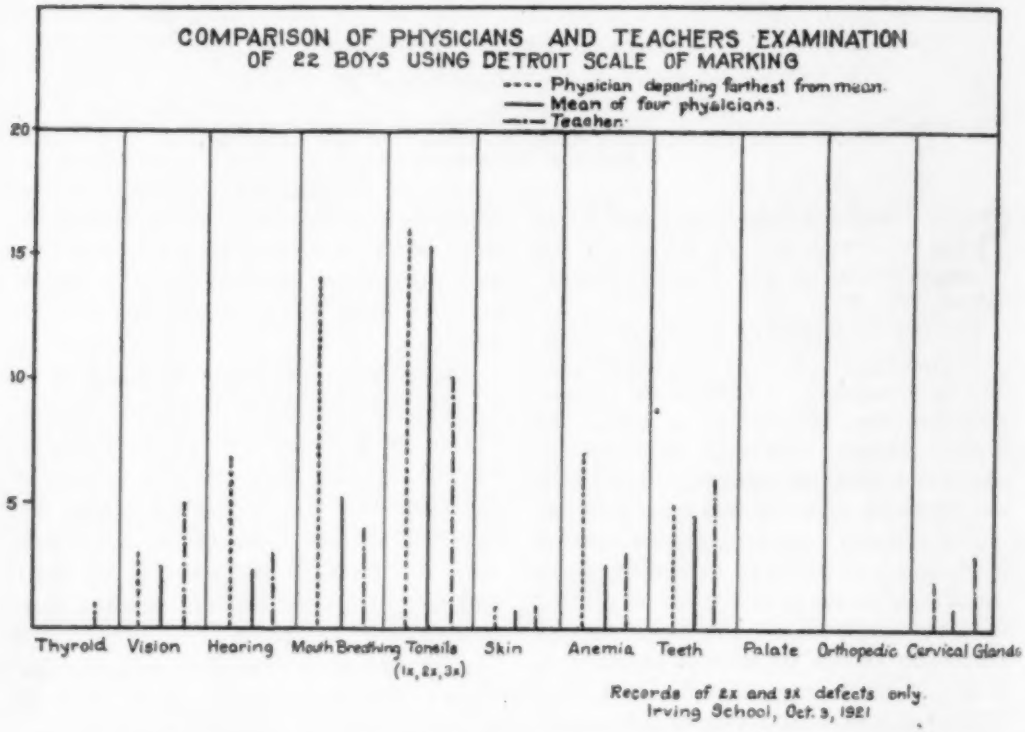
In case of infected tonsil add P. If a No. 1 tonsil is infected, add X to draw attention of nurse. (Count this as a defect.)

If there is a difference in the size of the two tonsils, record the worse condition.

It is to be understood that a tonsil marked X is the basis of a recommendation for examination by a private physician or clinic, the decision as to the removal of the tonsil being left to this subsequent examination.

Fourteen items are covered in the examination, and all are graded on the above basis. Only X cases are recognized as defects, and recommendation slips are sent home only for this class. With each examining team there is a squad nurse. The nurse attached to the school is always present at the examination, and these two, together with a teacher, take

CHART 1



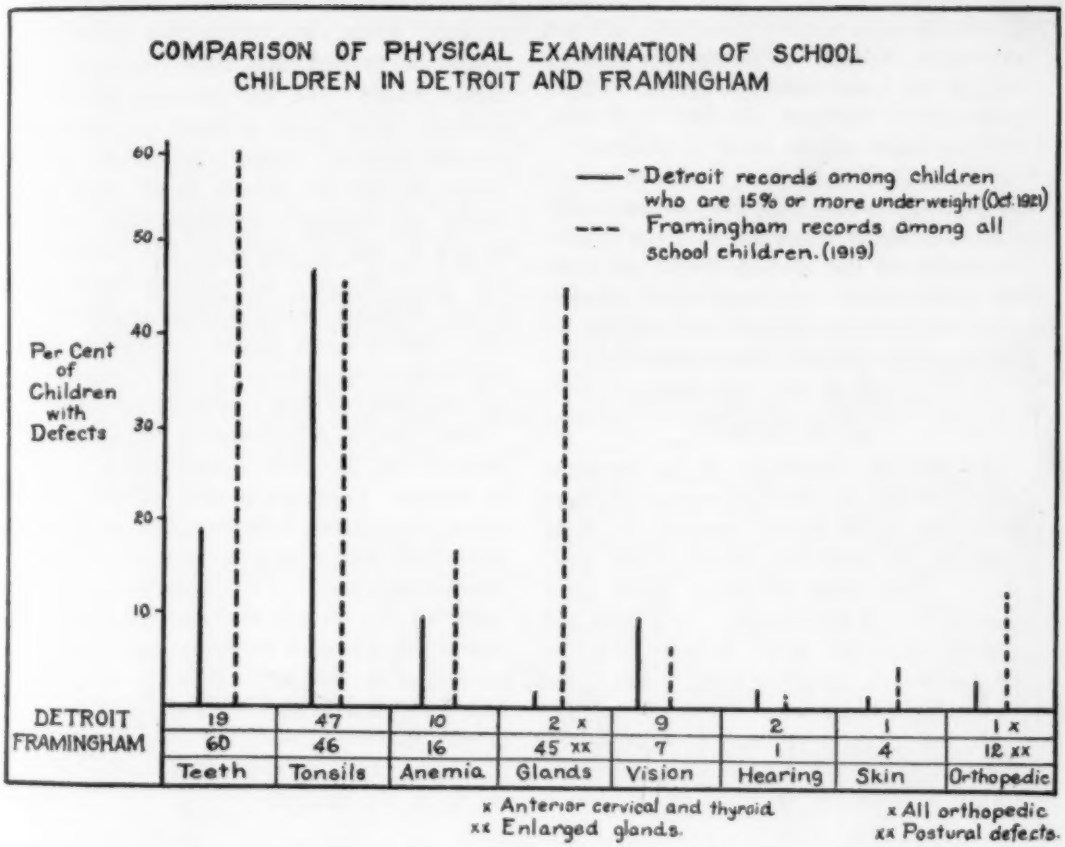

notes while the physicians devote their entire attention to the examination.

Each physician is assigned a list of defects to look for. One observes mouth breathing, tonsils, teeth, palate, cervical glands and thyroid, another tests vision and hearing, and still a third observes heart, lungs, skin, anemia, orthopedic defects, and phimosis. The children line up and pass before these three, who call off their findings in terms of the scale, and the nurse or teacher makes entries on the children's cards. These details are forwarded to the central office, recommendation slips are made out to the parents, and the school nurse makes a record of all defects to be followed.

In the examination begun October 1, 1921, all children 15 per cent or more underweight were examined. No others were examined at this time. The next step is to begin all over again, this time examining all first-grade children and those of other grades recommended by the nurse. The remainder of the time is spent on fifth-grade children, with no pretense of examining the entire school.

We are interested in securing accurate information so that the condition in one school may properly be compared with those in another. On the first day all 12 examiners came together, and the teams independently examined 22 boys who had previously been examined by teachers and graded in the same manner. The opinion of the teacher coincided very closely with the median opinion of the physicians (See Chart I.) In fact, the physician having the most extreme opinion showed far greater deviation from the median of all four physicians than the teacher. The necessity for having all physicians thoroughly familiar with the scale of marking and of reporting like defects by the same terms is shown by this test. For instance, in the grading of the 22 boys for anemia the physician on Squad 1 reported 2 cases; Squad 2, one case; Squad

CHART 2


COMPARISON OF PHYSICAL EXAMINATION OF SCHOOL CHILDREN IN DETROIT AND FRAMINGHAM
Detroit records among children who are 15% or more underweight (Oct. 1921)
Framingham records among all school children. (1919)
Per Cent of Children with Defects
60
50
40
30
20
10
DETROIT 19 47 10 2 x 9 2 1 1 x
FRAMINGHAM 60 46 16 45 xx 7 1 4 12 xx
Teeth Tonsils Anemia Glands Vision Hearing Skin Orthopedic
x Anterior cervical and thyroid
xx Enlarged glands.
x All orthopedic
xx Postural defects.

3, none; Squad 4, seven cases; the teacher 3 cases. One can readily appreciate the diversity of reports from schools if these physicians had been working independently in different sections of the city. In mouth-breathing, Squad 1 reported one case; Squad 2, five; Squad 3, two; Squad 4, fourteen cases; and the teacher, four cases. At the conclusion of this test the cases on which there was wide disagreement were brought before the four physicians concerned and reëxamined. Discussion followed, and an agreement was reached as to how the children should be marked. The same test on another group was tried two weeks later with more harmonious results.

DISTRIBUTION OF DEFECTS ACCORDING TO DETROIT SCALE

At the time of writing, 4,056 children in 80 schools have been examined, all of these children being 15 per cent or more underweight. The proportion of each type of defect is shown in the following table:

| Defects | No. | Defects per 1000 |
|---|---|---|
| Thyroid | 76 | 18 |
| Vision | 368 | 91 |
| Hearing | 84 | 21 |
| Mouth-breathing | 374 | 92 |
| Tonsils | 1922 | 474 |
| Teeth | 782 | 193 |
| Cervical Glands | 52 | 13 |
| Skin | 50 | 12 |
| Anemia | 386 | 95 |
| Deformed Palate | 6 | 1 |
| Cardiac | 250 | 62 |
| Lungs | 148 | 37 |
| Orthopedic | 27 | 7 |
| Phimosis | 519 | (boys) 209 |

(No. of boys, 2479.)

The greatest item is tonsils, 47 per cent of this class of children showing either enlarged or infected tonsils. By defects

we refer only to X cases. The cases graded as 1, or slightly abnormal, are not classed as defects. Nineteen per cent of the group have defective teeth. There were 3,018 children, or 74.5 per cent, with at least one or more X defects.

To make these findings with this type of grading more intelligible, we have presented in chart form some of the results alongside of the findings reported from an examination of over 2,000 schoolchildren without regard to weight, in Framington, Massachusetts, in 1919.

### CHECKING THE TEACHERS' EXAMINATIONS

To test the feasibility of the teachers' examination, complete examinations have now been made by the teachers in three schools, representing about 2,500 children. The same children were later graded by the physicians. As a rule, the teacher reported more defects than the physicians or, in other words, she erred in the right direction.

If this plan is perfected, it would be the policy to have all children examined by the teachers at the opening of school. There would be instituted a physical inventory week, in which the children would be graded, and then the medical teams would visit the schools and reëxamine only those selected as having possible defects. Recommendation slips would be sent to parents in all cases in which the teachers' findings were confirmed by the physicians. The teachers are quite capable of grading thyroid, vision, hearing, mouth-breathing, tonsils, skin, anemia, teeth, palate, cervical glands and orthopedic defects, though they cannot examine for lung and heart affections.

The system is believed to constitute a marked step forward in this field of public health. Teachers would become intimately acquainted with the physical capabilities of their charges, as well as their mental capacities. The extension of this work would include the introduction of courses in physical examination into the normal and teachers' training schools. The Detroit Health Department is sufficiently impressed with the advantages of this program to warrant a continued study of the subject.

□

# THE DETERMINATION OF THE VALUE OF CERTAIN SOAPS IN DISINFECTING WALL AND FLOOR SURFACES

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AND

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THESE experiments were performed in an attempt to determine definitely the germicidal value of certain soaps when subjected to actual conditions encountered in practical application.

The plan outlined and followed is to have an area made with certain materials resembling those found on walls and floors, protected by means of a glass cover in such a manner that extraneous organisms may be kept out. This area is to be inoculated with a definite quantity of test organisms, and is then subjected to the process of washing with the soap in question,

after which cultures are made to determine the destruction of bacteria which has occurred.

The area (wall or floor) is represented by a box, the bottom of which is made of cork, one-half covered with white oil cloth and the other left unlined, measuring 12.5 x 15.5 inches, and the sides 2 inches in depth; the top consists of a lid bearing a glass held in a frame which fits snugly over a ridge on the sides to make practically an air-tight joint.

The average length of time consumed to wash with soap and water and to rinse this area was found to be 34 seconds.

TABLE I

| Area | 12.5x15.5 |
|---|---|
| No. | Time |
| 1 | 35 sec. |
| 2 | 38 sec. |
| 3 | 30 sec. |
| 4 | 32 sec. |
| 5 | 35 sec. |
| Average | 34 sec. |

To determine the number of bacteria necessary to be applied to such an area to simulate a supposedly heavy contamination in cases of disease, a number of areas 12.5 x 15.5 were outlined on various walls of the laboratory. None of these had received any voluntary contamination. One was selected to test the method of culture, which was applied as follows: The area was roughly divided into four equal parts, and for each part a cotton swab on wooden applicator was moistened in 1 c.c. of sterile water, rubbed over one section of the area, and rinsed in 1 c.c. of sterile water. The remaining three sections were treated in a similar manner, and the washings collected in the same 1 c.c. of sterile water. This was then poured into a Petri dish and cooled agar added. After incubation, two colonies of spore-forming organisms were the only kind to be found.

The method of culturing was then changed, so that the swabs employed were placed in a bottle containing 100 c.c. sterile water. This was shaken until the cotton was well distributed and then 1 c.c. removed to a Petri dish and cultured. The results of these tests on various areas are given in Table II.

The observations made are that comparatively few organisms are present on a surface exposed to the light and circulating air, when the surface has been dry for some time, and that most of those organisms found belong to the spore-forming classes.

As demonstrating the number of bacteria to be found on floors and tables,

TABLE II

WALL AND TABLE

| Place | Area | Turbidity in 100 c. c. | No. in 1 c. c. Planted | Total in 100 c. c. |
|---|---|---|---|---|
| R. R. | 12.5x15.5 | Marked | 0 | 0 |
| R. R. | 12.5x15.5 | Marked | 1 spore former | 100 |
| R. R. | 12.5x15.5 | Marked | 1 spore former | 100 |
| R. R. | 12.5x15.5 | Marked | 1 staphylococcus | 100 |
| R. R. | 12.5x15.5 | Marked | 2 spore formers | 200 |
| R. R. | 12.5x15.5 | Marked | 3 spore formers | 300 |
| R. R. | 12.5x15.5 | Marked | 0 | 0 |
| B. R. Sink | 12.5x15.5 | Marked | 1 spore former | 100 |
| B. R. G. Table | 12.5x15.5 | Marked | 2 staphylococci | 200 |
| | | | 1 spore former | 100 |
| B. R. Dark Table | 12.5x15.5 | Marked | 200 spore formers | Infinity |

TABLE III
FLOOR AND TABLES

| Place | Area | Turbidity | No. in 1 c. c. planted | Total in 100 c. c. |
|---|---|---|---|---|
| R. R. Near desk..... | 15.5x12.5 | Marked | 2 staphy.<br>100 sp. formers | 200 staphy. |
| R. R. Near desk..... | 15.5x12.5 | Marked | Spread over plate | Infinity |
| R. R. B. Table..... | 15.5x12.5 | Marked | 1 staphy.<br>2 spore formers | 100 staphy.<br>200 |
| R. R. (Light) Near desk..... | 5 hrs. after routine washing | Marked | 2 staphy.<br>100 sp. formers | 200 staphy.<br>Infinity |
| R. R. (Dark) Cool near refrig. | 5 hrs. after routine washing | Marked | 200 staphy.<br>1 sp. former | Infinite staphy.<br>100 sp. form. |
| Wass. R. Work table. | 15.5x12.5 | Marked | 0 staphy.<br>1 sp. former | 0<br>100 sp. form. |
| Wass. R. Floor..... | 15.5x12.5 | Marked | 1 staphy.<br>3 sp. form. | 100 staphy.<br>300 sp. form. |
| Hall fl. Near door... | 15.5x12.5 | Marked | 0 staphy.<br>200 sp. form. | 0 staphy.<br>Infinite sp. form. |
| Hall fl. near door.... | 15.5x12.5 | Marked | 2 staphy.<br>100 sp. form. | 200 staphy.<br>Infinite sp. form. |
| Bat. R..... | 15.5x12.5 | Marked | 1 staphy.<br>200+sp. form. | 100 staphy.<br>Infinite sp. form. |

in comparison with the number found on areas of floors and tables recently washed in the routine cleaning of such places by a cleaner unaware of experimental conditions, Table No. III is of interest.

Thus it will be seen that a greater number of probable pathogenic bacteria as well as a greater number of spore-forming organisms are to be found on an area which has been recently washed than on an area which has been dry for some time.

To determine the number of bacteria which will permit a sufficient number to remain on the area after a short period of drying so that this number may be used in the examination of the germicidal soaps, an area 12.5 x 15.5 on a painted wall was given a coat of suspension of staphylococcus aureus and diphtheroids 2 billion per c.c. This area was permitted to dry, and then cultured according to the method hereinbefore described. The results are to be found in Table IV.

From this experiment it was decided to employ the usual suspension of staphyloccus and diphtheroids in a suspension of 2 billion per c.c., and to paint the suspension on with a camel's hair brush, permit the area to dry, then wash with soap and water and rinse with sterile water, and then culture in order to test the efficacy of the soaps. One-half of this area is cork and the other is white oil cloth, to represent both rough absorbing and smooth non-absorbing surfaces. The washings were collected in 1 c.c. of water. The results of the tests on the four preparations examined are given in Table V,

TABLE IV

| Place | Area | Time | Turbidity | No. in 1 c. c. | Total in 100 c. c. |
|---|---|---|---|---|---|
| R. R..... | 12.5x15.5 | Immediately after drying | Marked | Infinite staph. & diphtheroids | Infinite staph. & diphtheroids |
| R. R..... | 12.5x15.5 | 1 hr. later | Marked | 200 staph. diphtheroids | Infinite staph. & diphtheroids |
| R. R..... | 12.5x15.5 | 18 hrs. later | Marked | 100 staph. diphtheroids | Infinite staph. & diphtheroids |

and represents the total number of bacteria in the washings.

TABLE V

| Bact. Susp. 2 bill. -1 c.c | Substance | Before Washing | | After Washing | | Value | Date |
|---|---|---|---|---|---|---|---|
| | | Cork | Oil Cloth | Cork | Oil Cloth | | |
| " | 2% Formaldehyde cream | ††† | ††† | ††† | †† | None | 4-29 |
| " | 10% Formaldehyde cream | ††† | ††† | ††† | ††† | None | 4-29 |
| " | Cresol Tub Soap | ††† | ††† | ††† | †† | None | 4-29 |
| " | Fels Naptha | ††† | ††† | ††† | †† | None | 4-29 |
| " | 2% Formaldehyde cream | ††† | ††† | ††† | ††† | None | 5-3 |
| " | 10% Formaldehyde cream | ††† | ††† | ††† | ††† | None | 5-3 |
| " | Cresol Tub soap | ††† | ††† | ††† | †† | None | 5-3 |
| " | Fels Naptha | ††† | ††† | ††† | †† | None | 5-3 |

††200 to Infinite co'onies per plate.
†††Infinity

SUMMARY AND CONCLUSIONS:

1. A method of testing the action of a germicidal soap on surfaces has been given.

2. More probable pathogens are to be found on surfaces recently wetted than on those which have been dry for some time.

3. The germicidal soaps tested did not destroy the test organisms in the length of time usually employed to wash surfaces by the usual procedure of employing soap and water followed by rinsing.

□

# SOME OBSERVATIONS ON THE SANITARY CONDITION OF CONFECTIONS

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THE confections are members of a large group of foods which are often handled in such a manner as to cast doubt on their healthfulness. They are often dispensed by dirty hands, from dirty receptacles, and kept in stores of questionable cleanliness. They are usually eaten without further preparation which would render them free from any undesirable bacteria, should they be present. Wrapping in paper has not been extended to all grades of candy but it is gratifying from the sanitary standpoint that the use of boxes and paper by the manufacturers is increasing.

Not much work seems to have been done on the microbial content of these foods and confections. Cummins[1] published an interesting paper but studied the subject from the view-point of the manufacturer. He also paid most attention to the candies which are dipped in chocolate. Chocolate was found to contain a large number of bacteria, the varieties of which were not determined. Organisms forming gas in dextrose broth and lactose bile were common. No attempt was made, apparently, to determine whether these gas formers were members of the colon group or not. His results are also interesting concerning the longevity of *B. typhosus* and *B. coli* in chocolate. The former organism when inoculated into chocolate in large numbers remained viable for 140 days. During that time the number was reduced from 400,000 to 24,000 per gram. *B. coli* was reduced from 400,000 to 6,200 in 220 days.

The data here reported were secured on samples collected from various types of stores under conditions which usually obtain for the dispensing of such a food. We did not, however, visit what might be called the lowest type of store where sanitary conditions are not heeded. Thirty samples were examined for the numbers and types of bacteria; ten of these samples came from one of Chicago's high grade confectioneries. The other twenty samples were of the lower grades, some

1. Cummins, E. H. Certain Sanitary Aspects of Candy Manufacture. American Journal of Public Health, Vol. 5, No. 11, 1148-1163.

of which were purchased at five and ten cent stores. The latter samples were dispensed in bulk.

The samples were brought to the laboratory in the container in which they were dispensed by the vendor, either in a paper sack or box. After that they were handled aseptically, each sample for examination being removed from the container with sterile forceps and transferred to sterile bottles containing sterile water or salt solution. Quantitative dilutions were made from these water solutions and plates prepared. The bacteriological results are shown in the accompanying table.

TYPES OF CANDIES EXAMINED AND THE BACTERIAL CONTENT

| | Types of Candies | Number of Bacteria |
|---|---|---|
| 1. | Commercial Fudge | 1,040 |
| 2. | Cocoanut Cubes, Sugar Coated | 920,000 |
| 3. | Taffy in Papers | 2,240,000 |
| 4. | Lemon Drops | 0 |
| 5. | Pink Wintergreen Lozenges | 150 |
| 6. | Easter Eggs | 200 |
| 7. | Peppermint Chips | 0 |
| 8. | Lemon Gum Drops | 300 |
| 9. | Jelly Beans | 50 |
| 10. | Butter Cups (Soft Center) | 84,000 |
| 11. | Pink Peppermint Patties | 60 |
| 12. | Caramel and Nuts | 21,000 |
| 13. | Red Cinnamon Drops | 0 |
| 14. | Butterscotch | 738 |
| 15. | Bonbon | 250 |
| 16. | Caramel Fondant with Nuts | 500 |
| 17. | Green Easter Egg Basket | 28 |
| 18. | Maple Divinity with Nuts | 40 |
| 19. | Sweet Chocolate (Bulk) | 1,610 |
| 20. | Chocolates in Boxes | 9,232 |
| 21. | " " " | 2,095 |
| 22. | " " " | 98,600 |
| 23. | " " " | 50 |
| 24. | " " " | 2,070 |
| 25. | " " " | 5,604 |
| 26. | " " " | 183 |
| 27. | " " " | 1,400 |
| 28. | " " " | 1,500 |
| 29. | " " " | 216 |
| 30. | Home Made Fudge | 216 |

The bacteriological results were, in some cases, unexpected. The cheaper grades of candy were usually exposed for sale in large cases separated into compartments for the various kinds. The clerks removed the candy from these compartments either with scoops or with their hands. In this manner the hands might contribute undesirable microörganisms to candy. The use of the scoop for dispensing candy is certainly to be desired.

The bacterial content of candies seems to depend more on the presence of certain constituents than on the methods by which they are dispensed. Those made with large amounts of the volatile oil and similar flavors, such as menthol, wintergreen, cinnamon, etc., contained few bacteria, or were sterile. Other varieties like fudge contained many microörganisms. Those with soft centers of chopped figs or cocoanut had the greatest number of bacteria. Sample 2, cocoanut cubes, had 920,000 bacteria per gram. Sample 13, red cinnamon drops, was sterile. In light of the work of Bachmann,[2] Hoffman and Evans,[3] we have a ready explanation of these data. Cinnamic aldehyde, the important constituent of cinnamon, and eugenol, the important constituent in cloves, were found to possess germicidal properties in food preservation. They seem to function in the same manner in candy. Candies made from peppermint and such other materials have a low content of microörganisms on account of the germicidal properties of the flavor.

The bacterial counts secured on the real hard candies seemed to be lower. The highest number was secured from "taffy", which was pulled mechanically in the window of a local candy store. It was pulled by machinery, cut into pieces, covered with starch, and wrapped in paper. The high bacterial content of 2,240,000 per gram secured on this candy probably came from the air, the hands of

2. Bachmann, F. M. Inhibiting Action of Certain Spices. *J. Ind. Eng. Chem.*, 1916, 8, 620-623.
3. Hoffman, C., and Evans, A. The Use of Spices as Preservatives. *J. Ind. Eng. Chem.*, 1911, 3, 835-838.

the manipulator who wrapped it, and the starch.

In contrast with these candies, which represent the lower grades, there are the ten samples from a high class store in Chicago which may be regarded as representing a better grade of candy. The counts on these samples varied from 50 to 98,600, which is little different from those secured on the lower grades of candy. Here again those samples filled with fruits and figs had the larger counts. The manner of handling did not seem to have much significance in determining the bacterial content.

While the numbers of bacteria are interesting, the types are of still more interest. Search was especially made for those bacteria indicating fecal pollution, especially *B. coli*. Specimens from the water solution of the candy were inoculated in decimal dilutions into lactose broth fermentation tubes. If gas was formed in these tubes the routine procedures of the AMERICAN PUBLIC HEALTH ASSOCIATION were applied to determine the characters of the gas former. Gas was secured in some of the fermentation tubes, but no member of the colon group could be isolated. Investigation of this showed that gas in the presumptive test was due to members of the anaerobic spore forming group. The presence of these organisms was shown by inoculations into sterile litmus milk, rendered anaerobic by Wright's method, in which the curd was quickly peptonized. A strong odor of butyric acid was also evident.

The cultural and morphological characteristics of these strains were studied according to the descriptive chart of the Society of American Bacteriologists. Practically all of the bacteria were spore formers and proteolytic in nature. The other characteristics are not sufficiently significant to list in a paper of this nature since we are interested only in those bacteria of sanitary significance.

Mold spores were common. Yeasts were not isolated, although there is little reason to suppose that they were absent.

One experiment was initiated to determine the longevity of bacteria in candy. Fudge was prepared according to the usual methods and heavily seeded with cultures of *B. coli* and *Erythrobacillus prodigiosus*. After four months storage under dry conditions viable cells of both organisms could be isolated. Such experiments indicate the importance of handling candy under ideal sanitary conditions. A typhoid carrier might disseminate typhoid fever if he were allowed to assist in the preparation of the candy or to handle it during vendition.

## SUMMARY AND CONCLUSIONS

1. Bacteria of the colon group were not encountered in thirty samples of candy.

2. The bacteria in candy are in the dormant condition and are not carrying out their usual metabolic activities.

3. Spore-forming bacteria predominate.

4. Mold spores were encountered on practically all of the samples.

5. The use of certain volatile oil and allied flavors has much influence in determining the bacterial count. Cinnamon and peppermint were found to possess decided repressive action.

6. Candy which is infected, artificially or otherwise, will maintain the bacteria in the living condition for a protracted period.

7. Candy is no more of a potential danger in the spread of disease bacteria than many other foods which are eaten in the raw condition.

# THE EFFECT OF PEPTONE UPON THE TOXIGENIC PROPERTY OF B. DIPHTHERIAE NO. 8

HARRIET LESLIE WILCOX
*Research Laboratory, New York City Department of Health*

Read before the Laboratory Section of the American Public Health Association at the Fiftieth Annual Meeting, New York City, November 14, 1921

IT is known to all laboratory workers who are familiar with the production of diphtheria toxin that the strain of *B. diphtheriae* used in obtaining a potent toxin is called No. 8. This strain was isolated by Dr. Williams in the summer of 1895, and so stable has been its toxigenic property that it is used not only in the serum laboratories of the United States but in those of England and Europe as well.

The idea that different cultures of this strain should vary in their toxic productions was not entertained up to about 1916. However, from time to time requests for new transplants of No. 8 had been received at this laboratory from other workers who said that their cultures had lost the ability to produce a potent toxin. Previous to 1914 our strain was still producing a potent toxin, though with some irregularities in strength.

More recently, and coincident with the reports from other laboratories, the potency of the toxin produced at the Bureau of Laboratories has shown a marked decline. The average toxicity of the years 1914, 1915 and 1916 was 1-200 (or less) as compared with an average potency of 1-350 — 1-400 for the years 1911, 1912 and 1913.

In the summer of 1916, the writer was privileged to work a few weeks at the Pasteur Institute in Paris, and to observe the preparation and inoculation of the diphtheria toxin broth. This procedure consisted of seeding Martin peptone broth[1] in Fernbach flasks with fairly large amounts of broth culture of No. 8*.

The usual routine for the preparation of diphtheria strain was as follows:

> The stock culture was kept on coagulated oxserum while the other culture was cultivated entirely on Martin peptone broth and was transferred three times weekly. The culture on serum was sub-cultured every four weeks and was not used for toxin production unless the broth culture became contaminated; in such case a fresh culture in Martin peptone broth was made from the serum culture. How often recourse to this culture was made, the writer does not know, but from the careful technique employed one would say, rarely, if ever.

On the writer's return to the Bureau of Laboratories several experimental preparations of diphtheria toxin were made. The method of the Pasteur Institute was used, as well as their culture of No. 8 which had been brought back to New York. The results were so superior to those obtained by employing Witte peptone broth and our own culture of No. 8 that in January 1917 Martin peptone broth inoculated with the Pasteur culture of *B. diphtheriae* No. 8 was adopted as our method of toxin production. Since we were following as closely as possible the Pasteur method, we used the same procedure for the propagation of the culture of *B. diphtheriae*.

Comparative tests of our culture of No. 8 with that of the Pasteur No. 8 were made at Dr. Williams' request. The first two or three tests showed such a marked difference in favor of Pasteur No. 8 that we decided to see if, after a cultivation of several months or longer on Martin peptone broth, our No. 8 culture would produce as high a toxin in

1. Martin, Louis. Annales de l'Institut Pasteur, vol. 12, p. 26. 1897.

*This culture had been taken to the Pasteur Institute in 1896 by Dr. Williams.

Martin peptone broth as the Pasteur No. 8.

To differentiate between these two cultures of the same strain of No. 8 we have called the culture which has been propagated exclusively at the Bureau of Laboratories, "Research No. 8," whereas the culture obtained from the Pasteur Institute is designed as "Pasteur No. 8." These two cultures were inoculated in Martin peptone broth December 28, 1916, and transferred three times weekly in this medium.

At about the same time these cultures were inoculated similarly into Witte peptone broth, Research No. 8 being planted December 23, 1916, and Pasteur No. 8 December 28, 1916, and were transferred three times weekly.

In the summer of 1919 a second culture of No. 8 was obtained from the Pasteur Institute, and this was planted August 19, 1919 in Martin peptone broth, Berna peptone broth and Witte peptone broth; it was designated as "Pasteur 2 No. 8."

The records of these cultures, that is, the date each was planted in a different medium, the number of transfers weekly, together with the date and result of the planting to determine purity were kept on separate cards.

In order to obviate any possibility of the substitution of one medium for another while making the sub-cultures, the following procedure was adopted:

The cultures Research No. 8, Pasteur No. 8, and Pasteur 2 No. 8 in the Martin peptone broth were kept in a different container from the same cultures in the other peptone broths. At the time of transferring, only one container with its respective broth tubes was on the work table, thus avoiding any possibility of a Witte peptone broth tube being substituted for a Martin peptone broth tube and vice-versa.

The dilutions of the filtered cultures for the animal inoculation were made in 0.8 per cent NaCl. In the tables where the toxicity is given as being below 1-100 or 1-200, etc., it indicates that those were the dilutions inoculated and that they did not kill the test animals, or if they did so, not within the time limits. When a toxin is stated to be of a given strength it means that the given dilution killed a 250 gram guinea-pig within the four days, with the classical toxic symptoms. Occasionally it was not possible to obtain pigs weighing 250 grams, but in those tests made with heavier pigs the surplus weight was always discounted in estimating the toxicity. No guinea-pigs weighing below 230 grams were inoculated.

### *Martin Peptone Broth*

The comparative tests of Research No. 8 and Pasteur No. 8 in Martin peptone broth are given in Table 1. It is to be recalled that the cultures were subjected to cultivation in this broth, were transferred three times weekly and were then cultivated under identical conditions. To give the reader the approximate number of generations before the different tests were made the date of starting the cultures in the different broths is given in the tables.

TABLE 1.

TOXICITIES PRODUCED IN MARTIN PEPTONE BROTH BY THREE DIFFERENT CULTURES OF B. DIPHTHERIAE No. 8 AFTER CULTIVATION IN THE SAME BROTH. TRANSFERS HAD BEEN MADE THREE TIMES A WEEK.

| Date of Test | Research No. 8 Cultivation begun December 28, 1916 | Pasteur No. 8 Cultivation begun December 28, 1916 | Pasteur 2 No. 8 Cultivation begun August 19, 1919 |
|---|---|---|---|
| Jan. 19, 1917 | 1-100 | 1-400 | Not tested |
| May 31, 1917 | 1-300 | 1-400 | Not tested |
| June 30, 1917 | Below 1-200 | 1-500 | Not tested |
| Oct. 11, 1917 | Below 1-100 | 1-300 | Not tested |
| Oct. 19, 1917 | 1-150 | 1-800 | Not tested |
| Feb. 2, 1918 | 1-100 | 1-200 | Not tested |
| Sept. 19, 1919 | 1-200 | 1-600 | 1-600 |
| Oct. 2, 1919 | Below 1-100 | Below 1-200 | Below 1-200 |

TABLE I

It will be seen that in one test only Research No. 8 approximated Pasteur No. 8 in its toxic production. In the experiment dated May 31, 1917 Research No. 8 gave a toxicity of 1-300 as compared with a toxin of 1-400 produced by Pasteur No. 8. The greatest difference in their toxigenic powers was shown in the test dated October 19, 1917, when the M. L. D. of Research No. 8 was 1-150 in contrast to a potency of 1-800 produced by Pasteur No. 8. Subsequent comparative tests showed a diminution in the toxigenic production by both cultures in Martin peptone broth.

The first test comparing the three cultures, Research No. 8, Pasteur No. 8 and Pasteur 2 No. 8 was made September 19, 1919. The results showed that the two Pasteur cultures gave a toxicity of 1-600, whereas the Research No. 8 gave a low M. L. D. of 1-200. The last comparative test in Martin peptone broth was made in October, 1919, but the toxicities in this test were so low that only negative results were obtained.

*Witte Peptone Broth*

The number of tests made using Witte peptone broth was limited, due to the scarcity of the peptone. The broth used in these tests was made according to the formula recommended by Theobald Smith[2] for obtaining a potent toxin. As in the test made with Martin peptone, the three cultures were transferred in the Witte broth three times weekly. The period of cultivation may be judged from the dates in Table 2, in which the results are given.

2. Smith, Theobald, *Journal of Experimental Medicine*, vol. IV, p. 373. 1899.

TABLE II

It will be noticed that despite the fact that Research No. 8 had been cultivated in a medium containing Witte peptone practically ever since its isolation in 1895, its toxigenic property was much less in the first three tests than that of Pasteur No. 8. The test made May 27, 1921 was a great surprise for it was the first time that Pasteur 2 No. 8 had given a higher potency than Pasteur No. 8. Whether this difference would have been demonstrable in the March 12, 1920 test it is impossible to say, but it is evident that the toxigenic property of Pasteur No. 8 in Witte broth had deteriorated. Further reference to this will be made in the following pages.

*Berna Peptone Broth*

It was stated above that Martin peptone broth was used during the year 1917 at the Bureau of Laboratories for the routine production of diphtheria toxin with satisfactory results. In the early months of 1918, however, the potency of the toxin was irregular, and in the late spring several successive preparations of the broth gave too low a toxin for practical use. At this time we had just begun to use the Berna peptone for the production of tetanus toxin and the idea occurred to us that this peptone might be satisfactory for obtaining a potent diphtheria toxin. Therefore a small amount of broth was made according to the method of Theobald Smith, but with the Berna peptone instead of Witte. The result of this test was very gratifying as an M. L. D. of 1-350 was obtained. No comparative tests of Research No. 8 and Pasteur No. 8 were made at this time as

TABLE 2

TOXICITIES PRODUCED IN WITTE PEPTONE BROTH BY THREE DIFFERENT CULTURES OF B. DIPHTHERIAE NO. 8 AFTER CULTIVATION IN SAME BROTH. TRANSFERS HAD BEEN MADE THREE TIMES A WEEK.

| Date of Test | Research No. 8* Cultivation begun December 23, 1916 | Pasteur No. 8 Cultivation begun December 28, 1916 | Pasteur 2 No. 8 Cultivation begun August 19, 1919 |
|---|---|---|---|
| Jan. 19, 1917 | Below 1-100 | 1-400 | Not tested |
| Oct. 26, 1917 | 1-150 | 1-700 | Not tested |
| Sept. 15, 1919 | 1-100 | 1-400 | 1-250 |
| Mar. 12, 1920 | Below 1-100 | Below 1-100 | Not tested |
| May 27, 1921 | Below 1-100 | Below 1-200 | 1-450 |

*This culture had been carried on in Witte broth since 1895 and transferred every other day as the routine procedure.

the writer began a year's leave of absence.* The two cultures, Pasteur No. 8 and Research No. 8 were planted in Berna peptone broth and were transferred three times weekly.

On the return of the writer from France in 1919 the comparative tests in Berna peptone broth of the two cultures, Research No. 8 and Pasteur No. 8, were made together with the second culture of No. 8 that had been obtained from the Pasteur Institute in the summer of 1919 and which is spoken of in the test as Pasteur 2 No. 8. The results are given in Table 3.

TABLE III

Four of the eight tests given in Table 3 showed decidedly the greater toxigenic property of the two Pasteur cultures over that of Research No. 8. The toxicities of the other four tests were so uniformly low that less definite comparisons were possible.

The toxin made from the Berna peptone broth was so inferior from October 1919 through to the new year, that efforts were made to see if there was not a domestic peptone on the market which would be more satisfactory for diptheria toxin production. Comparative test of Parke Davis peptone and Berna peptone broths was made and inoculated with only Pasteur No. 8. The results were encouraging, for the toxin made from Parke Davis broth had an M. L. D. of 1-700 in contrast to an M. L. D. of 1-200 obtained with Berna peptone broth. Accordingly the three cultures were cultivated in broth made with Parke Davis peptone. However, no comparative tests of the toxigenic powers were made until March, 1920. These and subsequent results are given in Table 4 in which are also included three tests of the culture "American."

TABLE IV

The marked differences in the toxigenic power of these strains were again in evidence. As far as was known, there was no explanation for the low toxicity of Pasteur 2 No. 8 in the test made January 21, 1921. This was 1-300 as against the M. L. D. of 1-1000 produced by Pasteur No. 8. In all the other comparative tests with the different peptones, the toxin made from Pasteur 2 No. 8 had corresponded very closely with the toxins made from Pasteur No. 8 with the exception of the experiment of September 15, 1919 made in Witte peptone broth (Table 2). Here Pasteur No. 8 produced an M. L. D. of 1-400 as compared with a toxicity of 1-250 made from Pasteur 2 No. 8.

It is interesting to note that the "American" culture (Table 4 November 26, 1920) gave after only seven generations in Parke Davis peptone broth a toxin with as high a potency as the Pasteur No. 8 which had been cultivated eleven months in that medium.

When it was evident that Research No. 8 produced consistently a very much lower toxin than either of the other strains, regardless of the length of cultivation in any particular broth, the thought occurred to us that it would be interesting to see what effect the different peptones may have had on the toxigenic

*During this time all of the cultures in the different media were carried on by Miss Alice G. Mann whose cooperation is greatly appreciated.

TABLE 3

TOXICITIES PRODUCED IN BERNA PEPTONE BROTH BY THREE DIFFERENT CULTURES OF B. DIPHTHERIAE No. 8 AFTER CULTIVATION IN THE SAME BROTH. TRANSFERS HAD BEEN MADE THREE TIMES A WEEK.

| Date of Test | Research No. 8 Cultivation begun May 4, 1918 | Pasteur No. 8 Cultivation begun May 4, 1918 | Pasteur 2 No. 8 Cultivation begun August 19, 1919 |
|---|---|---|---|
| Aug. 22, 1919 | Below 1-100 | 1-100 | 1-100 |
| Sept. 13, 1919 | Below 1-100 | 1-250 | 1-250 |
| Sept. 15, 1919 | 1-100 | 1-500 | 1-500 |
| Sept. 19, 1919 | Below 1-100 | 1-500 | 1-400 |
| Sept. 26, 1919 | Below 1-100 | 1-100 | 1-100 |
| Oct. 4, 1919 | Below 1-100 | 1-100 | 1-100 |
| Oct. 10, 1919 | Below 1-100 | 1-250 | 1-250 |
| Oct. 18, 1919 | Below 1-100 | 1-150 | Below 1-100 |

TABLE 4

TOXICITIES PRODUCED IN PARKE DAVIS PEPTONE BROTH BY THREE DIFFERENT CULTURES OF B. DIPHTHERIAE NO. 8 AFTER CULTIVATION IN THE SAME BROTH. TRANSFERS HAD BEEN MADE THREE TIMES A WEEK.

| Date of Test | Research No. 8 Cultivation begun Jan. 1, 1920 | Pasteur No. 8 Cultivation begun Jan. 1, 1920 | Pasteur 2 No. 8 Cultivation begun Jan. 1, 1920 | "Americain"* |
|---|---|---|---|---|
| Mar. 3, 1920 | 1-100 | 1-1000 | Not tested | Not tested |
| Mar. 12, 1920 | 1-100 | 1-800 | Not tested | Not tested |
| Nov. 16, 1920 | 1-300 | 1-900 | Not tested | Not tested |
| Nov. 26, 1920 | 1-200 | 1-1000 | 1-700 | 1-1000** |
| Jan. 21, 1921 | 1-200 | 1-1000 | 1-300 | 1-700*** |
| Apr. 7, 1921 | 1-100 | 1-1500 | 1-700 | 1-800 |

*This culture was obtained from Dr. Durand, Lyons, France, and was the B. diphtheriae No. 8 which had been sent him probably from the Pasteur Institute, Paris.

**This culture had been inoculated into Parke Davis peptone broth for seven generations before seeding of Toxin flasks.

***This had been five generations in Parke Davis broth before seeding of toxin flasks.

power of Pasteur No. 8 after its cultivation in the different peptone broths. Accordingly, a preparation of Berna peptone broth was inoculated on July 23, 1920 with the Pasteur No. 8 culture which had been cultivated exclusively in Martin, Witte, Parke Davis and Berna peptone broths. The day before the test was started, seed cultures in Berna peptone broth were planted from these cultures, as fairly large amounts of the seed cultures were used to inoculate the toxin flasks and we wished to obviate carrying over any of the other peptone broths into the Berna broth. The results of this test, together with the dates of first cultivation in the different broths are given in Table 5.

TABLE V

The results of the above test show that the cultures of Pasteur No. 8 which had been cultivated exclusively in Berna, Martin and Parke Davis peptone broths gave satisfactory toxins. The culture, however, which had been transferred in Witte broth since December 28, 1916 gave a potency of below 1-100.

Another test was made with these same cultures which had been cultivated in broths made with Witte, Berna and Martin peptone, but instead of the Berna peptone broth, Witte peptone broth was used. As in the former test, the seed cultures were planted in Witte peptone broth before the inoculation in the Witte toxin broth.

TABLE VI

Here again the culture which had been in Witte broth gave the lowest toxicity. This test was repeated nine months later, on April 22, 1921. (see Table 7.)

TABLE VII

It will be seen that these results confirm the former test in the Witte peptone broth and also that in the Berna broth, in that the culture of Pasteur No. 8

TABLE 5

TOXICITIES PRODUCED IN BERNA PEPTONE BROTH BY PASTEUR NO. 8 AFTER CULTIVATION IN BROTHS MADE WITH DIFFERENT PEPTONES.

| First transplant of Series | Transplanted three times weekly Cultivated in broth made with: | Date of Test | Toxicity |
|---|---|---|---|
| May 4, 1918 | Berna peptone | July 23, 1920 | 1-500 |
| Dec. 28, 1916 | Witte peptone | July 23, 1920 | Below 1-100 |
| Dec. 28, 1916 | Martin peptone | July 23, 1920 | 1-400 |
| Jan. 1, 1920 | Parke Davis peptone | July 23, 1920 | 1-450 |

TABLE 6

TOXICITIES PRODUCED IN WITTE PEPTONE BROTH BY PASTEUR NO. 8 AFTER CULTIVATION IN BROTHS MADE WITH DIFFERENT PEPTONES.

| First transplant of Series | Transplanted three times weekly Cultivated in broth made with: | Date of Test | Toxicity |
|---|---|---|---|
| Dec. 28, 1916 | Witte peptone | Dec. 9, 1920 | 1-150 |
| Dec. 28, 1916 | Martin peptone | Dec. 9, 1920 | 1-300 |
| May 4, 1918 | Berna peptone | Dec. 9, 1920 | 1-500 |

TABLE 7

TOXICITIES PRODUCED IN WITTE PEPTONE BROTH BY PASTEUR No. 8 AFTER CULTIVATION IN BROTHS MADE WITH DIFFERENT PEPTONES.

| First transplant of Series (Transplanted three times weekly) | Cultivated in broth made with: | Date of Test | Toxicity |
|---|---|---|---|
| May 4, 1918 | Berna peptone | April 22, 1921 | 1-800 |
| Dec. 28, 1916 | Witte peptone | April 22, 1921 | Below 1-100 |
| Dec. 28, 1916 | Martin peptone | April 22, 1921 | 1-700 |
| Jan. 1, 1920 | Parke Davis peptone | April 22, 1921 | 1-700 |

which had been cultivated in the Witte broth gave the lowest toxicity.

Attempts will be made to confirm the results reported in this paper:

1. By sub-culturing into Witte broth the culture Pasteur No. 8 which has been propagated continuously in Parke Davis peptone broth since January 1920, and which has given regularly a very potent toxin in this medium; and by comparing these two cultures from time to time in order to see if the toxigenic powers of the culture in Witte broth has been adversely affected while the culture kept in Parke Davis peptone broth retains its ability to produce strong toxin.

2. By sub-culturing Pasteur No. 8 which has apparently lost its toxigenic power by cultivation in Witte broth, in Parke Davis peptone broth to see if this culture after varying lengths of time in Parke Davis broth may not regain its power to produce a potent toxin.

3. By further cultivation of Pasteur 2 No. 8 in Witte broth to see if this culture will lose its toxigenic power in Witte peptone broth as Research No. 8 and Pasteur No. 8 have apparently done.

## SUMMARY

The culture of Research No. 8 which has been propagated exclusively in Witte broth since 1895 at the Bureau of Laboratories has apparently lost its power to produce a potent toxin in any of the broths tested.

The Pasteur culture of No. 8 which was planted in Witte broth December 28, 1916 has also apparently lost its ability to produce a potent toxin in both Witte and Berna peptone broths. The same culture kept in Berna, Martin and Parke Davis peptone broths produce strong toxins in both the Berna and Witte broths.

The cultures of Research No. 8 which have been carried on in Berna, Martin and Parke Davis peptone broths have not as yet recovered their powers to produce a potent toxin in any of the broths tested.

The toxigenic property of Pasteur 2 No. 8 culture has not as yet been affected deleteriously by the two years cultivation (1919-1921) in Witte peptone broth.

## CONCLUSIONS

It would seem in view of the above findings:

1. That Witte peptone broth had an inhibitory or destructive influence upon the toxigenic powers of both the Research No. 8 and the Pasteur No. 8 cultures.

2. That the Pasteur 2 No. 8 may be similarly affected after a still longer cultivation in Witte broth.

3. That the different preparations of Witte peptone received in this country just prior to 1914 may be responsible for this deleterious effect upon the cultures. The fact that the culture Research No. 8 from the time of its isolation in 1895 to 1912-1913 had been cultivated in Witte peptone broth without any signs of the lowering of its toxigenic property as shown by the production of a potent toxin tends to confirm this conclusion.

4. That it is possible that the different preparations of any peptone may vary in their effects upon the toxigenic property of *B. diphtheriae* No. 8.

5. That the continuous cultivation of a culture of *B. diphtheriae* No. 8 in the same broth as that used for the toxin

production is apparently not necessary for obtaining a potent toxin, is shown by the "American" strain of No. 8 which, after only seven generations in Parke Davis broth gave as potent a toxin in that medium as Pasteur No. 8 which had been cultivated for eleven months in Parke Davis broth.

□

**New Honors for Dr. Stephen Smith.**—Dr. Stephen Smith, founder and first president of the American Public Health Association, who passed his 99th birthday on the 19th of last February, received the honorary degree of Doctor of Science at the June commencement exercises from Columbia University, of which he is the oldest living alumnus, having been graduated from the College of Physicians and Surgeons in the class of 1850. Dr. Smith marched in the academic procession, despite his advanced age.

In presenting him for the degree, President Nicholas Murray Butler paid the following tribute to the grand old man of public health:

"Stephen Smith—Graduated doctor of medicine from the College of Physicians and Surgeons with the class of 1850; foremost in planning measures for the protection of the public health and for the care of those unfortunates who are the state's dependents; winner of distinction on a hundred fields of professional endeavor and public service; walking with steadiness, with calm courage, and with powers unimpaired, down the long highway of a hundred years, the most interesting figure in American medicine and in American public service today; degree of doctor of science."

✚

### Modern Health Crusade

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System that culls the glamour
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Required in war,
The fervor of the fight,
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Creator of healthy habitations
For healthy minds,
Builder of clean bodies,
Fit dwelling places
For clean souls.

*T. J. Edmonds, Executive Secy., Iowa Tuberculosis Associaton, in Health Bulletin of the New Jersey Tuberculosis League.*

## CONTRIBUTORS TO THIS ISSUE

**Dr. Eugene R. Kelley** is one of the best known and most efficient of our state health officers. He received his academic education at Bowdoin, and his medical at Johns Hopkins University. His official career began in the state of Washington, where he was assistant commissioner and then commissioner of health. In 1915 he became director of the Division of Communicable Diseases in the Massachusetts State Department of Health, and was appointed commissioner in 1918. He is a member of the Executive Board of the American Social Hygiene Association, and during the last year was president of the Asociation of State and Provincial Health Officers.

**Dr. George T. Palmer,** epidemiologist of the Detroit Department of Health, is a graduate of the Massachusetts Institute of Technology, and spent several years in epidemiological work with the New Jersey State Board of Health, as staff chief of the New York State Commission of Ventilation. He made a four years' study of ventilation problems. During the war he was a captain in the Sanitary Corps. With Dr. Henry F. Vaughan, he assisted Dr. Victor C. Vaughan in the preparation of *Epidemiology and Public Health,* recently published.

**Henry Harap** has for three years been director of the Summer Play School which he describes in this issue. He has done graduate work in education at Teachers College, has taught in public and private schools in New York City, and is director of the Boys' Department at the Hudson Guild, a well-known New York settlement house.

**Professor Fred W. Tanner,** head of the Department of Bacteriology at the University of Illinois, received his Ph.D. degree from Illinois in 1916. He was bacteriologist for the Illinois State Water Survey, 1912-1915. He is the author of *Bacteriology and Mycology of Foods* and translator of Guithermond's *Yeasts.*

**Miss Esther Davis,** who collaborated with Professor Tanner in the laboratory work on confections, is now doing research on botulism in the Department of Bacteriology, University of Chicago.

**Dr. Theodore C. Merrill,** who collaborates with **Dr. H. Violle,** of the Pasteur Instiute, Paris, in the paper on "Recent Applications of the Principles of Nutrition," was formerly associated with the Medical Bureau of the Paris Headquarters of the American Red Cross, where he had special experience in child hygiene. He has recently left the staff of the Red Cross and is now engaged in private literary research and publicity work.

□

**Red Cross Exhibit Manual** (ARC 1100), April, 1922. Issued by the American Red Cross, Washington, D. C.

Although this 27-page pamphlet is intended for Red Cross chapters and contains information of a general nature, it presents much useful instruction concerning exhibit technique. Sanitarians would derive benefit from reading the sections on arranging a booth, conducting an exhibit, and how to make posters. Special features of a Red Cross exhibit, as nursing and public-health nursing, home hygiene and care of the sick, first aid, nutrition, disaster relief, and Junior Red Cross are outlined. Many illustrations from actual exhibits are included.

# EDITORIAL SECTION

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## NATIONAL HEALTH DAYS

The second week of next December will witness the spectacle of practically all the health organizations of the United States working together to sell a health idea to the American public. National, state and local, public and private bodies will combine to convince the average American citizen that it is wiser to be examined to forestall illness than to wait until he is sick.

The initiative is being taken by the National Health Council, and the national health organizations which it represents. State and local health officers will be invited to organize their respective territories.

Friday, the first of three "Health Days," will be devoted to child health, with special emphasis on health examinations. Saturday will be known as "Health Examination Day" and the barrage of publicity will be aimed more particularly at the adult. The third day will be "Health Sunday."

The observance of these national health days will be a great stimulus to better individual and community health. Let all get on the band wagon.

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## THE CITY OF THE FUTURE

Recent events have again called attention to the necessity for intelligent provision if the metropolitan district of New York City is to serve efficiently the increasing millions which inhabit it during the next century and beyond. The problems created by this concentration are growing daily in seriousness and are engaging the attention of an increasing number of thoughtful citizens. The same thing applies, of course, to all large cities whose numbers have outrun the facilities for economic and social well-being. But for various

reasons—the peculiar configuration of land and water in New York, the conflict of jurisdictions, the influx of immigration, the importance of the city as the commercial capital and distributing center of the country at large—the problems of congestion are more aggravated in New York than elsewhere in the United States. These problems are perhaps as important from the sanitarian's standpoint as from any other.

In February an important meeting was held at the New York Academy of Medicine, at which problems of housing, transit, and sanitation were discussed by Mr. Stein, General O'Ryan and Drs. Soper and Copeland. Last month the Russell Sage Foundation initiated a movement of far-reaching significance when it called a conference of several hundred prominent experts and citizens to consider a plan for New York and its environs, at the Engineering Societies Building. A committee has been created by the Foundation, consisting of Charles D. Norton, chairman, John M. Glenn, Frederic A. Delano, Dwight W. Morrow, Frank L. Polk, Robert W. DeForest, Frederick P. Keppel, secretary, and Flavel Shurtleff, assistant secretary, to make a comprehensive study of the metropolis and its needs. Herbert Hoover, Elihu Root and other distinguished public men recognized its importance by their presence and participation. On motion of Charles Dana Gibson, ably seconded by Mrs. August Belmont, a resolution calling for the support of all citizens for the plans of the committee was unanimously adopted.

The preliminary inquiries will be divided into four groups: 1. Economic and industrial. 2. Physical characteristics and needs of the area, including transportation facilities, ports, bridges, terminals, parks and public places. 3. Legal. 4. Social and living conditions. The last is obviously the category which includes most problems of public health. A salutary trend has been given to the discussions by those initiating them in the emphasis on the fact that the greatness of a municipality lies not in mere bigness, but in adequacy of its population and of its adjustment to the needs of that population. In the daily lives of millions, questions of vitality and fatigue, working conditions, infection, pure milk, water and food economically distributed, prompt reduction of sewage and other wastes, accessibility of good clinical and diagnostic service, are the elements of well-being which condition happy and abundant life. Sanitarians of all types should be prominent in the councils of any such movement for community planning. And every city of more than 500,000 population (at least) should be looking actively toward its future ability to meet the demands which will be imposed upon it.

One feature of the Sage Foundation Study of interest to industrial hygienists is the resolution of coöperation adopted by the executive committee of the Safety Institute of America, urging that the prevention of accidents in the future metropolitan area of 50,000,000 inhabitants be taken due account of in the proposed city plan, and offering its facilities for assistance in a serious permanent study. Other health and welfare agencies, both national and local, might well emulate the Safety Institute by offering service in the fields of their own special interests.

## A TARIFF ON HEALTH

One need not be a Democrat to take exception to certain features of the Fordney Tariff Bill now before the Senate and occupying first place upon the calendar.

The Underwood Tariff, enacted in 1913, provides a rate of 25% ad valorem for optical instruments, microscopes, etc., and grants to educational and research institutions the privilege of importing these items free of duty. This privilege had prevailed likewise in previous tariff acts, under Republican administrations.

The Fordney bill (H. R. 7456) calls for a 35% ad valorem duty on microscopes, photographic apparatus, projection apparatus, etc., and 40% on laboratory and other scientific instruments composed of metal, and would abolish the privilege to educational institutions of free importation. No sooner had the Fordney bill got into the Senate than Senator McCumber, chairman of the Senate Finance Committee, attempted to secure the amendment of the House bill to provide a 55% duty on scientific instruments as well as the abolition of duty-free importation. It seems probable that 35% will eventually be adopted by the Senate. There the matter now stands, while all those interested are marshaling their forces and arguments to bear upon the shortsighted legislators whose vision of public welfare seems blinded by the necessity for more revenue. Of course there are two sides to the question. The domestic manufacturer needs a certain protection, but the present rate of 25% is adequate, and even some of the domestic manufacturers, recognizing the blow such a tariff would deal to scientific investigation in the United States, are opposed to the bill.

Have not sanitarians an interest in public questions such as these? The same indifference to health and larger issues is manifested in varied ways. Equally characteristic is the provision for the increase of the tariff on toothbrushes, against which Commissioner Copeland has recently forcefully protested. It is unnecessary to argue the merits of European products as against American to realize the handicap which the instrument tariff would place upon routine bacteriological and chemical work in public health, as well as more advanced research. Prices would inevitably be raised more than the percentage of the duty imposed. And however small the fraction of imported goods, the effect would be much the same.

The American Association for the Advancement of Science, composed of over 12,000 members, and including the most distinguished and representative men of science in America, at its Toronto meeting last December, passed a resolution setting forth the indispensability of scientific education and investigation in a modern civilized republic, and deploring any tendency to raise the duty on scientific apparatus or to eliminate duty-free importation by educational and scientific institutions. The politicians ignored this protest. Scientific books (not instruments), and a few drugs are left on the free list, but the most important items are to be heavily taxed.

Sanitarians, as well as all other scientists, while there is still time to make their united action felt, should write or see their own senators and congressmen, and the members and chairman of the Senate Committee on Finance.

## DR. JOHN NATHANIEL McCORMACK
### 1847-1922

Dr. John Nathaniel McCormack, 76 years of age, an outstanding figure in American preventive medicine, died at his home in Louisville, Ky., on May 4. Dr. McCormack was born near Howard's Mill, Nelson County, Ky., November 9, 1847. At the age of 12, he left the public school to help his father on the farm, and then continued his studies at home in his effort to fit himself to study medicine. When he was 23 years old he was graduated from Miami Medical College of Cincinnati, with first honors among 600 students, for which he was granted an interneship in the Cincinnati Hospital. Instead of accepting this, however, he took up the practice of medicine in Nelson County in the neighborhood of Athertonville. During the cholera epidemic of 1872 it is said he treated every cholera case in the vicinity of Athertonville.

He was granted the degree of M. D. in 1876 by the School of Medicine of the University of Louisville. During the yellow-fever epidemic of 1878 he took charge of all cases in his neighborhood, at the direction of Dr. Luke P. Blackburn, afterward governor of the state. In 1879 the Kentucky State Board of Health was organized, and Dr. McCormack was made a member of the Board. Since that time there has not been a single death in the state from either cholera or yellow fever. In 1883 he was appointed State Health Officer, and held that position till 1912. When Dr. McCormack was elected to the presidency of the State Medical Association in 1881 he was the youngest man who had ever held this position. He wrote, and obtained the passage of the first State Medical Practice Act in 1888. It is said that since that time he has drafted most of the important medical legislation which has been passed in Kentucky. President Grover Cleveland expressed his official thanks to Dr. McCormack following the suppression of an imminent cholera epidemic in 1888.

Members of every school of medicine and all practitioners under the drugless act have had their licenses issued by Dr. McCormack. In no other state in the Union have the licenses issued to practicing physicians been signed by one individual. By this means Dr. McCormack came to know every physician practicing in the state. In 1892 Dr. McCormack relicensed every doctor in Kentucky because a number of quacks had started a false advertising campaign. As a result there are at the present time no advertising quack doctors in the state.

During his career he was the center of many fights and investigations in the Kentucky Legislature, emerging from all victorious. Dr. McCormack was the attending physician when Governor William Goebel was shot by an assassin at Frankfort at the old State Capitol in 1900, and was the only man who could testify that his successor, J. C. W. Beckham, was old enough to occupy the Governor's chair, having been present at his birth.

No one man in the United States has contributed more valiantly to the advancement of public health than this great physician, who was also a great organizer and a leader of men. His more than a half century of service is in itself an unusual accomplishment. He began his career in a community in which cholera and yellow fever were accepted as yearly visitants. He closed his career at a time when the mosquito had been outlawed and filth diseases had become negligible. He lived to see the seemingly impossible become the accepted. He was in truth a pathfinder, but always kept abreast of the times.

Dr. McCormack was the father of Dr. A. T. McCormack, present State Health Officer of Kentucky, who succeeded him upon his retirement from that responsibility in 1912. Since that time he had been director of the Bureau of Sanitation. He was at his desk when stricken by a paralytic stroke, and died within a few days. He was known by all native Kentuckians as a tireless worker, and will be greatly missed.

## LETTERS TO THE EDITOR

To the Editor:

I have noticed lately in the Journal several articles in regard to the control of diphtheria, disparaging the efficiency of quarantine or isolation.

Every health officer who has cultured many school children and contacts, is impressed by the fact that there are from three to five carriers to every clinical case, and also that a comparatively few clinical cases of diph-

theria can be traced directly to another clinical case.

Is it not, therefore, as unreasonable to expect quarantine or isolation alone to check the spread of diphtheria as it is to stop a bucket from leaking by plugging one hole when there are several other holes?

What is said about diphtheria apparently applies to scarlet fever and, with certain reservations, to measles and whooping cough, The preventive measures for these diseases must be based on the assumption that the secretions of the mouths and noses of all persons are potentially dangerous, and we must endeavor to inculcate such personal habits on the part of all children as will prevent the transmission of secretions from one mouth to another.

In every public school room in the state of Virginia we endeavor to have posted a placard on which are printed the following two rules, which the teachers are urged to enforce:

RULE I

Whenever you cough or sneeze, bow your head or put a handkerchief over your mouth and nose.

RULE II

Don't put in your mouth fingers, pencils, or anything else that does not belong there, nor use a common drinking cup.

Just as the chances of transmission are reduced by the practice of these rules so is the incidence of these diseases reduced.

ENNION G. WILLIAMS,
*State Health Commissioner.*

# ASSOCIATION NEWS

## LIST OF NEW MEMBERS

Proposed for election to the A. P. H. A. May 1 to May 31, inclusive.
Names of Sponsors are set in **Bold Face Type.**
Names of New Members are set in Light Face Type.

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**CANADA**

**J. W. S. McCullough, M. D., Toronto, Canada.**
J. J. Middleton, M. D., Provincial Board of Health, Spadina House, Toronto, Canada, Full-time Public Health Officer.

# EMPLOYMENT BUREAU

## POSITIONS WANTED

**Positions wanted announcements will be carried in this column. The charge is $2 per insertion. Copy should be received at this office by the 8th of the month.**

**Wanted:** Chemist and bacteriologist with training in sanitary engineering wishes change to another responsible position. Seventeen years' experience and now employed as chief of a large laboratory. Capable of acting as director of a municipal laboratory or superintendent of a water plant for a large city, or to combine these activities for a smaller community. State health department work or connection with a private enterprise requiring similar qualifications considered. Location anywhere east of Mississippi River, east or south section preferred. Salary commensurate with responsibilities, minimum $3,000 per annum. Only reasonably permanent position, where progressive development of activities is desired, considered. References and full history of experience furnished on application. Available on reasonably short notice. Address Chase 215, care this JOURNAL, New York.

**Wanted:** Position with some well-organized state division of child hygiene, any form of work in maternity or child welfare by woman physician, who has just finished

a year's special study of obstetrics and periatrics. Address T. 216, care of this JOURNAL, New York address.

**Wanted:** Position as director or assistant director of public health laboratory or instructional position in biochemical department of recognized university by man, age 28, with seven years' experience in teaching army laboratory, and public health laboratory work. Large initial salary not so much desired as congenial working conditions and chance for advancement. Can furnish best of references. Address V. E. 205, care of this JOURNAL, New York address.

# BOOKS AND REPORTS REVIEWED

**The Assessment of Physical Fitness.** *By Correlation of Vital Capacity and Certain Measurements of the Body. Georges Dreyer, C.B.E., M.A., M.D., Professor of Pathology in the University of Oxford. In collaboration with George Fulford Hanson, late Lieut. U. S. A. Medical Corps, Air Service. With a Foreword by Charles H. Mayo, M.D. New York: Paul Hoeber,* 1921. *Pp.* 128. *Cloth. Price,* $3.50.

In this volume the authors make a very valuable contribution to anthropometric science and to clinical medicine. Emphasizing the need for more satisfactory methods of estimating the physical fitness of man, woman or child, Professor Dreyer aims to supply medical men and others interested in this subject with a method which in principle is not new, but is original as to the details of its application. He presents a series of formulae and tables giving information regarding the weight of the human body in its relationship to the length of the trunk, circumference of the chest and the so-called vital capacity of the lungs. He ignores the height standing, and finds in his studies no relationship between the age of the individual and the range of the indices given in the table. These data are applied in interpreting the condition of the various classes in the population and those suffering from pulmonary tuberculosis, as well as persons with functional disorders, such as industrial fatigue, fatigue of aviators, etc.

Professor Dreyer states that for all practical purposes people may be grouped in three classes: A, B and C, representing conditions of perfect, medium, and poor physical fitness. He appears to find a definite relationship between the vital capacity and the activity and environment of the individual, and gives a rough classification of physical fitness as determined in the average case by the occupation and environment. For example, in Class A, he includes Army and Navy personnel, athletes, police force, blacksmiths, and others who are required to be physically active. In Class B he includes the professional class, such as lawyers, doctors, business men, high-grade mechanics, and clerks. In Class C, those who are either sedentary in their occupation or exposed to unfavorable environmental influence, such as tailors, potters, lower-class clerks, painters, and factory children. On the basis of his researches, Professor Dreyer is prepared to state that if a person is found as much as 10 per cent below the vital capacity normal for his class, he is probably suffering from some depressing health condition. If he is 15 per cent below, it is practically certain that he is physically unfit. In order properly to apply the factor of vital capacity, there must be reference to the tables on trunk length, chest measurement, and body weight. Allowance must be made for unusually thin or unusually heavy people in determining whether the vital capacity is either subnormal or supernormal. Apparent excess may be shown in those whose weight is below normal, and conversely an apparent deficient capacity may be shown in those who are overweight.

Those who have followed Professor Dreyer's work as reported in the London *Lancet,* August 9, 1919, and June 6, 1920, have been impressed with the high value of his method, especially in clinical work. In a number of clinical centers it has been reported that this method gives astonishingly accurate results in determining the physical fitness of patients, especially those suffering from tuberculosis; that is, the present condition of vitality of the individual can be determined and the probable stage of the disease. It is obvious that this method should prove of service

in other types of trouble where deficient respiratory capacity may be a symptom.

Such tables as Professor Dreyer offers fill a long-felt want, since there has been lacking accurate and satisfactory standards for interpreting the significance of variations in the so-called vital capacity as measured by the spirometer. Even though tentative, they should form the basis of a more thorough development of this phase of research. The commonly employed method for determining lung capacity by chest expansion is practically worthless and is accorded but little attention by those experienced in life-insurance selection. The relationship between chest measurement at rest and the body height and weight has been found of more value in medical selection for life insurance. This factor has been given serious consideration in the acceptance or rejection of light weights. It is significant that life-insurance companies have been particularly successful in selecting favorable types of underweights, as the report of the Medico-Actuarial investigation shows.

It is a little surprising that no mention is made in Dreyer's book of the Flack tests which were employed in the British Aviation Service, although an examination of the records tends to establish the fact that the expiratory force test (blowing up the column of mercury) and the fatigue test (blowing up the column of mercury and holding it as long as possible) give actually more reliable testimony as to physical fitness than the spirometer ratings. These tests are very simple and may be readily applied.

One fault in the present volume which we may be permitted to point out is the paucity of research material and the meager discussion of the original statistical data upon which the elaborate tables and formulae are built. In the introduction, Professor Dreyer states that the tables are derived from a number of observations "sufficient to ensure a degree of accuracy that should prove entirely satisfactory." If far-reaching conclusions are to be drawn from these tables and the results of the methods employed, such as are suggested in the preface by Dr. Charles H. Mayo, namely, that the estimation of vital capacity in the prognosis of life's duration "parallels very closely the results of a general examination," it is important that the scientific public be fully informed with regard to the original data and its treatment. It is to be hoped that in the next edition of this work Professor Dreyer will do justice to the immense amount of labor and research that preceded the preparation of these tables and include a full discussion of the development of his method. No tables or formulae, however elaborate, can have any value beyond that of the original data upon which they are based.

The vital capacity as determined by Professor Dreyer's method may, and probably does, furnish correct information as to *present* physical fitness or vitality, but future physical fitness is an entirely different matter. It is a commonplace in life-insurance selection to find men who are unquestionably physically fit at the time of examination; the functions of their organs may not be in any way impaired, but they are regarded as very poor risks because of personal history, family history, or physical defects which expose them to greater liability to future disease, and such rulings have been justified by subsequent mortality experience.

When we examine the values of normal or supernormal vital capacity readings as evidence of physical fitness, we are, as Dr. Dublin points out, by no means on such secure ground, taking Professor Dryer's evidence as it comes. In his studies at the Brompton Hospital of 200 cases, Professor Dreyer emphasizes the fact that 17 of the hospital staff known to be normal, showed normal vital capacity; but he ignores the fact that out of 116 cases known to be pathological, 30 per cent showed vital capacity within the normal range —that is, either slightly above the norms he has fixed or less than 10 per cent below. It is clearly apparent from his studies that a subject with active, though very much improved, tuberculosis may register a normal vital capacity. Of course the clinical attitude of mind toward such a case is extremely favorable. An expectation of a permanent cure is justifiable. But we know from mortality experience on such cases that the risk is in a substandard class.

Peabody and Wentworth's studies at the Peter Bent Brigham Hospital give further evidence of the clinical value of vital capacity readings, especially in heart disease. Here again, however, we meet the limitations of this test. Lowered vital capacity readings are apparently only found in those cases where there are secondary signs such as dyspnea or a failure of compensation. For example, 25

cardiac cases without dyspnea showed 90 per cent or better vital capacity.

It is notable that Professor Dreyer emphasizes the danger of misinterpreting the readings, for instance, of overweight or underweight subjects. If we interpret his discussion correctly, the overweight subject would be regarded as having a normal vital capacity if he registers a vital capacity that is normal for a man of normal weight. Thus in the prognosis of life duration for such a subject the excess weight would be ignored. In the face of life-insurance statistics on overweight, mortality experiences over a considerable period of time would be necessary to justify the conclusion that the normal vital capacity would place this individual in the normal mortality class.

Another danger involved in giving undue weight of significance to a favorable vital capacity reading is that the physician or patient may be deterred from thoroughly searching for physical impairments potentially menacing to life and health, but of such a type that in their early stages they have no disturbing effect whatever on vital capacity or immediate physical fitness and activities. On the other hand, it is quite clear that many comparatively harmless and temporary conditions may, by depressing the circulation and the nervous state, render an individual temporarily unfit and cause a very poor vital capacity reading. In fact, Professor Dreyer states that a low vital capacity reading due to sedentary occupation may be corrected by exercise. It is therefore after all only one test, and though a test of very high value, it is not likely to prove an infallible means of predicting longevity except in types that are obviously fundamentally deficient.

The Dreyer formulae have been discussed by Dr. Louis I. Dublin in a paper read before the Association of Life Insurance Medical Directors, October 21, 1921. Dr. Dublin points out some discrepancies and errors in the formulae, especially those relating to women, which will no doubt be corrected in a future edition. It may be said that the tables are more consistent and practical for use as applied to males than to females. In some thousands of observations made at the Life Extension Institute with this method it has been found very useful in distinguishing between substandard types and light weights of sound constitution. The Flack tests have also been found useful in revealing the conditions of lowered vitality. It has been noted, however, contrary to Dreyer's contentions and those of several of his followers, that in advanced cases of organic trouble these tests must be applied with caution, as unfavorable reactions are sometimes noted.

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EUGENE LYMAN FISK, M.D.

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**The Cause and Cure of Colds.** *William S. Sadler, M.D., professor of therapeutics, Post-Graduate Medical School, Chicago. Chicago: A. C. McClurg & Co.,* 1922, *5th edition. Pp.* 190. *Price,* $1.50.

The impression one derives from reading Dr. Sadler's book is that laziness and inertia are potent factors in the causation of colds. The author does not say this in so many words, but there is no escaping this conclusion. To prevent colds one must lead a life of active or positive health. This means regular exercise during the winter season, abstention from over-eating of rich and seductive foods, toning the skin by cold baths, and living in cool indoor atmospheres. It means

further active attention to incipient colds in order to abort them before they progress further. These things are what every normal person should do, what most people know they should do, and yet which all too few people actually do. Business, studies, social engagements all tend to anesthetize people as to active health. In other words, the prevention of colds is a matter of personal hygiene. It is up to the individual to do these things for himself.

The book is replete with valuable advice on hygiene and the treatment of colds in their different stages. It seems a mistake that the recent advances in this subject have been reserved for the last chapter instead of being inserted throughout the book. As it is, one has to read certain erroneous statements in the earlier chapters, only to be confronted with statements diametrically opposite in the concluding chapter. It would seem that much of the recent experience in ventilation research should have received recognition in the early chapters. It is unfortunate that a well-set-up book published in 1922 should speak of the poisonous gases in indoor atmosphere that weaken the skin and air passages. "Certain poisonous gases found in expired air are probably condensed and fall to the floor." These gases "add greatly to the poisonous and deleterious influence of the atmosphere of all living apartments which are not perfectly and ideally ventilated." Our modern conception is that respired air does not contain poisonous gases and that there is no separation or stratification of carbon dioxide. There is the startling statement that "all churches, theaters, and schools ought to be regularly fumigated with formalin from once in two weeks to once in two months." In view of the fact that fumigation following infectious disease was discarded as unnecessary by most health departments eight or ten years ago, it seems a waste of effort to fumigate as the author advises.

Chapter VIII, on influenza, credits the Pfeiffer bacillus as the cause of influenza, but this is repudiated later in Chapter X. Also influenza is described in Chapter VIII as conferring no immunity on its victims, and later, in Chapter X, we read that immunity following a world-wide epidemic is usually sufficient to protect one generation against another such outbreak.

However, if all would follow the instructions on personal hygiene advocated by Dr. Sadler, we should be a healthier nation and much freer from colds.

GEORGE T. PALMER, DR. P. H.

✣

**Nutrition and Growth in Children.** *William R. P. Emerson, A. B., M. D., professor of pediatrics, Tufts Medical School. New York: D. Appleton & Co.,* 1922. *Pp.* XXIX+341. *Illustrated. Price* $2.50.

This book by Dr. Emerson, the pioneer in nutrition work for children, is based on fourteen years' experience. Malnutrition is an old problem, and the ideas and theories held about it have frequently emanated from men working behind desks rather from those in direct contact with the children needing help. Dr. Emerson therefore feels that the old beliefs that malnutrition is caused by bad air, poverty, improperly cooked food, heredity, syphilis, tuberculosis, and self-abuse are to be discarded or neglected to a position of secondary importance. Malnutrition is a clinical entity with characteristic history, definite symptoms, and pathological signs. The malnourished child is a sick child and should be so considered. Study and treatment of these malnourished children in nutrition classes have shown, almost without exception, that the real causes of malnutrition can be found. As a result of Dr. Emerson's studies, new factors have come to the front. These are home control, food habits, health habits, physical defects, and overfatigue.

With these primary factors in view, a definite program for the control of malnutrition can be formulated. Such a program should include four forces that may safeguard the child's health: the home, the school, medical care, and the child's own interest. A well-organized nutrition class is the best agency for coördinating these forces and thus insuring rapid improvement in health and growth. A nutrition program for a community,—the nutrition clinic,—its organization and procedure, are outlined in detail. Case histories and the lessons to be learned therefrom are described. In addition there are valuable appendices containing the forms used in the keeping of nutrition records. Social workers, teachers, health officers, and physicians should find this book of invaluable assistance in understanding and controlling the problems of the undernourished child.

D. GREENE, M. D.

# PUBLIC HEALTH NOTES

Abstracts by D. Greene, M. D., James A. Tobey and Homer N. Calver.

**United States Supreme Court Holds Child Labor Law Unconstitutional.**—The Federal Child Labor Tax law which provided a tax on all manufacturing establishments in which children under 14 years were employed or children between 14 and 16 years employed more than eight hours a day or more than 6 days a week, was held unconstitutional on May 15, 1922. The opinion of the Court was delivered by Chief Justice Taft. In it he declared that the question was whether the child labor tax law was really an excise or whether it was a regulation of the employment of child labor within the states. The Court was of the opinion that obviously the legislation was aimed at restriction and regulation of the employment of child labor and was not merely for the purpose of raising revenue. Such regulation of a state function is not within the federal jurisdiction as the Tenth Amendment of the Constitution reserves to the states all powers not especially delegated to the Federal Government nor prohibited by the Constitution to the states. Under the clause in the Constitution, the states derive their police power and their supreme jurisdiction over all matters within the borders of their own states. The Court stated that if such legislation were allowed, it would break down all constitutional limitations of the powers of Congress and completely wipe out the sovereignty of the states. The tax is called a penalty to coerce the people of a state to act as Congress wishes them to act in a matter which is strictly state business. The Court seems to recognize the evils of child labor by stating "We can not avoid our duty, even though it require us to refuse to give effect to legislation designed to promote the highest good. The good sought in unconstitutional legislation is an insidious feature because it leads citizens and legislators of good purpose to promote it without thought of the serious breach it will make in the ark of our covenant or the harm which will come from breaking down recognized standards." It will be remembered that the federal law prohibiting transportation in interstate commerce of goods made at a factory where child labor was employed was held unconstitutional several years ago. (Hammer v. Dagenhart, 247 U. S. 251.) It would seem, therefore, that the only way in which federal control of child labor can be obtained is by an amendment to the federal Constitution. (J. A. T.)

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**Politics and the Health Officer.**—"An intelligent and enterprising young officer, a graduate of one of the foremost medical schools in the country, who devoted full time and expert knowledge to the protection of the health of his community, has recently been forced out of office after a political turnover in an Eastern city. His place has been taken by a physician with antiquated notions and scant acquaintance with modern scientific methods of controlling disease, whose only qualification for the position seems to be the fact that he occupied it before when the same party was in power. He spends an hour or so a day at the health department and draws the same salary, $4,500 a year, which his predecessor earned.

"New York can take no pharisaic attitude toward other states in this matter. As a result of upstate elections in the fall of 1921, six city health officers, most of them experienced and competent men, have been displaced, in some cases to the definite detriment of community health interests. Yet, . . . . New York has a statute adopted last year which makes it possible for any second or third class city to go a long way in eliminating politics from its health department. Chapter 249 of the laws of 1921 permits any such city to abolish the old-fashioned, cumbersome, and too often irresponsible board of health, and to substitute a modern, single-headed health department. The fact that so many other states have imitated New York State's public-health law and its state health administration under a single commissioner goes to prove the merits of this plan in theory and in practice. By the voluntary adoption of the 1921 statute the cities of the State should likewise set themselves in the vanguard of progress in local health administration.

"Why, indeed, should any American city take chances with its public health? It is perhaps too much to expect that all technical public services will be withdrawn from politics in the near future, but if there is any department of public affairs in which an immediate effort

should be made to achieve this result it is in the field of public-health administration. The most vital interests of the life and health of every citizen demand that the city health officer, at least, should know his job and should be protected in office as long as he is honest and competent. A good health officer should be kept for life or as long as he is physically and mentally capable of discharging his duties. Removal of a health officer should be possible only on charges for proven misconduct or inefficiency. The individual citizen does not insist that his own physician qualify as a Republican or Democrat before he is permitted to prescribe for the family; no more should a community consider politics in selecting its health officer."—Editorial, *Health News*, New York State Department of Health, April, 1922.

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**The Modern Pay Clinic and the Doctor.**—During the past 250 years the constant push of industrialism and commercialism has changed the face of the earth, has driven the tiller of the soil from his fields into slums, which did not exist before, and then bound him down as an appendage to giants of steel and steam. It has affected men, women and children, and contributed to cause new diseases and suffering; in fact, a new health problem. This, however, has lent itself to solution by the genius of individual men, and with the passing of time many of these technical problems have been solved. But the question of readjustment of relations between the medical practitioner and the economically disfranchised mass of toilers has not yet been solved; in fact, few practitioners are intelligently conscious of the existence of this problem.

The pay clinic is a feeble attempt at the solution of one phase of this pressing problem, the phase of inadequate medical attention available to the average worker. This problem is essentially an economic one. The reason they do not receive proper medical attention is because self-respecting men and women are caught between the two difficulties of self-respect and economic limitation. They will not go to the dispensaries, and they cannot afford to consult a private practitioner. In the same way the medical practitioner is no less liable to the economic forces of current society than are the rest of the cogs of the industrial machine-made society. If he would live, the cash payment must be the basis of his practice. And so, as a solution comes the pay clinic. As a palliative one may grant its effectiveness; as a cure one must doubt.

Medicine is an art as much as it is a science. No case is identical with any other case, nor will any solution in one circumstance precisely fit another. Even causes of the same condition will vary. Mass service in medicine makes use of the science but never the art of medicine. There is no way in which medicine may be practiced satisfactorily in which the personal relation of the physician to the patient is not thorough and complete. One of the commonest complaints against the pay clinic is that the patient is denied the opportunity of talking over his difficulties, and the majority of these patients suffer more from this lack than from the physical discomforts themselves. Thanks to the various schools of psychotherapy, Freudian or otherwise, the average physician is now impressed with the importance of taking the psychic status of the patient into consideration when according him treatment. Life has become too difficult for the ordinary individual, and the physician with his knowledge of the structure and function of the human body is called upon to help in making the necessary adjustment and to point out the rational way, as did the priest in former times.

The solution of this problem must come through some way that will provide for the economic interests of the physician, keep the intimate relations between patient and doctor, and put at the command of the physician all the apparatus and equipment available in a hospital, which no one physician should have to own. The pay clinic may in time take care of all this.—Iago Galdston, M. D., *The Nation's Health*, May 15, 1922, p. 265.

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**Privies and the Spread of Intestinal Infections.**—Kligler reports the results of an investigation made for the Rockefeller Institute with the purpose of studying the various types of privies, particularly with regard to the danger of soil pollution and its relation to the spread of intestinal infections. The main conclusion arrived at on the basis of the experimental and field observations is that in moderately compact clay, sand clay, or sandy soil, free from cracks, the possibility of subsoil pollution of the ground water is negligible, provided the ground water level is more than 10 feet below the polluted area.

The investigation shows that the pit and septic privies, if properly constructed, are practically free from danger as far as the spread of intestinal infections of bacterial origin is concerned. Whether that holds true with regard to hookworm infection still remains to be determined. These privies might under certain conditions become a menace from a sanitary standpoint. If, for example, it was found that the soil is favorable to the survival and passage of the bacteria to the underground water, then they might be considered dangerous. However, under the various conditions represented in this investigation, there was neither prolonged viability nor ready passage through soil.

From the practical sanitary standpoint there are certain requirements which the sanitary privy should fulfill. The first obvious requisite is concentration of the excreta at a single point below the surface of the soil. The next essential is to prevent the mechanical distribution of the fecal matter, either by overflow wash or by flies. The excreta should therefore be deposited a sufficient depth below the surface to prevent overflow during heavy rains and should furthermore be properly covered to eliminate fly-breeding. Furthermore, since it has been shown that pollution may at times, under extreme conditions, penetrate a depth of 10 feet, it is important that a vertical distance of at least 10 to 15 feet be allowed between the fecal deposit and the ground-water level. Finally it is desirable that the privy require little attention and be relatively cheap.

The above generalizations should form the basis for the practical construction of either pits or septic privies. The pit privy can be used safely in any soil similar in character to those studied in the course of this investigation, provided the ground-water level does not rise higher than 10 to 15 feet from the surface. In such soils a pit about 3 feet deep would be within the limits of safety if properly protected against flies. In limestone regions and in soil where the water-table is near the surface, the pit privy should not be considered safe. In such localities the Kentucky sanitary privy or one of similar design might be recommended.

In general it should be emphasized that any form of subsoil disposal should be designed with a knowledge of the character of the soil and particularly with due regard to the ground-water level. The vertical distance between the source of pollution and the ground water is the significant factor. The horizontal distance between the source of pollution and the well is of relatively slight importance except when there are underground channels or cracks in the soil.—Monograph No. 15 Rockefeller Institute for Medical Research, *Investigation On Soil Pollution and the Relation of the Various Types of Privies to the Spread of Intestinal Infections*, I. J. Kligler.

✣ (D. G.)

**The Cleansing of Cups and Glasses.**—In a paper submitted to the Société Médicine Publique (Paris), Dr. E. Briau reports that as a result of his investigations he has become convinced that the summary fashion in which glasses are rinsed in cold water is often of such character as to increase rather than diminish the chances of contagion. He proposes, therefore, that restaurants and other dispensers of beverages be required to cleanse their glassware in two separate waters, the first to consist, in place of tepid water, of a strong solution of hydrochloric acid, which without injuring the glassware would destroy rapidly all the organic microörganisms by which it might be contaminated. (The persons in charge of this should, of course, wear rubber gloves.) After being taken from the acid solution, the glassware should be thoroughly rinsed in running water to remove all traces of the acid.—*Medical Officer*, May 13, 1922. (D. G.)

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**Efficiency in the Baking Industry.**—Dr. Wm. C. Witte has been assigned by the U. S. Public Health Service to coöperate with the American Bakers Association in a study of its sanitation problems and possibilities, and work out every problem he can find within the industry. Dr. Witte is well fitted for this task, having kept two great army zones free from contagion and every condition making for bad sanitation during the world war. The bakers have determined to self-educate their industry, and they intend to have expert advice. Referring to his future work with the Association and the Inspection Service, Dr. Witte in a short article in *Baking Technology*, says that the world war awakened the people to the importance of the health of the worker as a factor with regard to the volume of production. It is the intention of the Inspection Service to interpret the various sections of the Sanitary Code, adopted by the American Bakers Association, in application to individual bakeries and to assist employers

and employees to meet them. It is also the intention to make a study of the health hazards of the baking industry, as to whether the baker is particularly susceptible to respiratory diseases, has a shorter term of life due to his work, etc., or whether this was only the case in the old days of poorly ventilated workshops, long hours and low labor standards.

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**The Toxicity of Putrid Food.**—Dr. W. G. Savage, whose experience with the food problem and with outbreaks of food poisoning has been wide, shows in this article that there is an almost entire absence of any evidence that tainted and incipiently decomposed food is harmful. The prevailing view as to its harmfulness may be perfectly justified but it does not seem to be supported by any reliable evidence in its favor. The firm support given to the harmfulness of tainted food is largely a matter of sentiment, supported by erroneous deductions from data which are vitiated by three prevailing fallacies. One is that the chemical studies, upon which the theory of the harmfulness of food in a condition of putrefaction has been built up, rest upon a study of the end products of putrefaction and not upon an investigation of the toxicity of such foods in stages of putrefaction when there is a possibility of their being consumed. The second fallacy is that nearly the whole of the evidence as to the alleged toxicity of the products of protein decomposition is based upon experiments upon animals in which the method of introduction is by injection and not by feeding. The remaining fallacy is that the alleged harmfulness of meat or other foodstuffs in a condition of incipient putrefaction has usually been confused with poisoning by food infected with specifically harmful bacteria. This fallacy is kept up by the retention of the expression "ptomaine poisoning" for outbreaks of this character. The stimulus needed for effective administrative action at the present time is a realization that food poisoning outbreaks and attacks of illness generally, from unsound food, are due to infection with specific bacteria in nearly all, if not in all cases. —W. G. Savage, *Hospital and Health Review*, October, 1921, 11. (D. G.)

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**Treatment of Anthrax.**—The author feels that the measures of local therapy of anthrax in common use should be abandoned, owing to the disadvantages or even dangers they possess. The most important of these disadvantages is the lack of any specific effect upon the course of the malady, and when a septicemia has begun. The value both curative and prophylactic in animals and therapeutic in man, of anti-anthrax serum must now be regarded as established by statistics. Its apparently specific effect upon the course of this disease must be recognized. The mortality can no doubt be reduced to a minimum by early recognition and prompt serum treatment. The serum should be administered both by local injection, around the lesion, and generally into the circulation by the subcutaneous, intramuscular, and intravenous routes. An outline is given of the dosage and frequency of injection.—J. C. Regan, *Monthly Bulletin, N. Y. City Health Department*, January, 1922. (D. G.)

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**Use of Typhoid Vaccine by Mouth.**—An interesting investigation in which the prophylaxis of typhoid fever was tried by using typhoid vaccine by mouth is reported by Vaillant. During an epidemic of typhoid fever Dr. Vaillant substituted for the ordinary hypodermic injection the administration of a vaccine combined with bile and given by the mouth. The bile as has been shown facilitates the absorption of bacterial products from the intestine. Careful inquiry indicated that very slight inconvenience resulted from this method of taking the bacteria; of 396 vaccinated, 15 had slight colic, 5 slight diarrhea on the first day, 24 headache, and 1 nausea. The vaccine and bile are taken in pill form on rising in the morning, for 3 successive days. The results in 2,000 cases with controls are as follows:

(1) 1,236 vaccinated by mouth—Cases of typhoid 5; morbidity rate .17 per cent

(2) 173 vaccinated hypodermically—Cases 4; morbidity rate 2.3 per cent

(3) 600 unvaccinated—Cases 21, morbidity rate 7.7 per cent.

—L. Vaillant, *Annales de l'Institut Pasteur*, February, 1922, 148. (D. G.)

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**Chickens and the Spread of Hookworm.**—The results of various experiments conducted in Trinidad show that in hookworm control the chicken is both beneficial and harmful. Hookworm eggs remain viable while passing through the alimentary canal of chickens and are able to hatch. Hookworm eggs swallowed by chickens produce infective hookworm larvae when the fowl feces are mixed with

animal charcoal or with soil. The results of a series of experimental feedings indicate that the great majority of hookworm eggs ingested by chickens fail to produce infective hookworm larvae. This failure is attributed in part to breaking of eggs in the gizzard, injury from urine in the feces, and to malnutrition of the larvae in the excrement. Dangerous infective spots may be established around drinking receptacles by chickens that have swallowed hookworm eggs day after day. Hookworm eggs deposited out of doors under conditions unfavorable for development can be carried by chickens to favorable environments. Human stools voided in unfrequented places can be carried by chickens to the door yard which is traversed by barefooted persons. Newly hatched hookworm larvae can pass through the digestive tracts of chickens apparently uninjured. A comparison of the reduction of mature hookworm larvae by fowls with the establishment of infective spots by them convinces the author that chickens are more beneficial than harmful in the control of hookworm disease in Trinidad.—J. E. Ackert, *American Journal of Hygiene*, January, 1922. (D. G.)

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**The Endemic Goiter Problem.**—The prophylactic use of iodin has completely eradicated goiter in certain domestic animals in goiter districts where formerly the incidence in these animals was high. That a like prophylactic measure is equally applicable in man has been shown by Marine and Kimball in their survey of goiter and the use of iodin in the Akron schools. As a public-health measure, the prophylactic use of iodin has gained great momentum during the last two years in the cities bordering on the Great Lakes. When it is once generally instituted, goiter belts will cease to exist and a cretin will become a medical curiosity. Adenomata would be eradicated in the second generation if gravid mothers were given iodin; carcinoma of the thyroid would be almost wiped out and the incidence of exopthalmic goiter would markedly decrease. One may readily picture the time when national legislation will demand that all salt for family use which comes into a goiter district must contain iodin.—H. G. Sloan, *Southern Medical Journal*, March, 1922, 202. (D. G.)

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**League of Red Cross Outlines Program.**—The council of the League of Red Cross Societies has just concluded its second biannual meeting. A set of resolutions adopted on the last day of the meeting states that hereafter the activities of the League will be concentrated upon the development of popular health instruction, public-health nursing and the Junior Red Cross. These three subjects were chosen as a result of the unanimous opinion of the delegates as to what constitute the vital problems common to all countries. Thirty-four countries were represented at this meeting. Judge John Barton Payne was elected by the Board of Governors as chairman of the Board to succeed the late H. P. Davison. For the next two years the budget of the League will be assured by the American Red Cross, other Red Cross societies making, however, many substantial contributions. The next meeting of the League will be a regional conference at Bangkok, Siam, in November. This will be particularly for the benefit of the societies of the Orient. It was decided also by the council to move the headquarters of the League from Geneva to Paris. —*Red Cross Courier*, April 29, 1922.

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**Rockefeller Foundation Activities.**—During the year 1921, the Rockefeller Foundation and its agencies, the International Health Board, the China Medical Board, and the Division of Medical Education, have carried on the following activities, according to the annual report issued by President George M. Vincent:

Continued a quarter-million annual appropriation to the School of Hygiene and Public Health of Johns Hopkins University;

Pledged two millions to Harvard for a school of health;

Contributed to public-health training in Czechoslovakia, Brazil, and the United States;

Aided the Pasteur Institute of Paris to recruit and train personnel;

Promoted the cause of nurse training in America and Europe;

Underwrote an experimental pay clinic in the Cornell Medical School;

Formally opened a complete modern medical school and hospital in Peking;

Assisted twenty-five other medical centers in China;

Promised a million dollars for the medical school of Columbia University;

Contracted to appropriate three and one-half millions for the rebuilding and reorgan-

ization of the medical school and hospital of the Free University of Brussels;

Made surveys of medical schools in Japan, China, the Philippines, Indo-China, Straits Settlements, Siam, India, Syria, and Turkey;

Supplied American and British medical journals to 112 medical libraries on the continent;

Supplemented the laboratory equipment and supplies of five medical schools in Central Europe;

Defrayed the expenses of commissions from Great Britain, Belgium, Serbia, and Brazil;

Provided 157 fellowships in hygiene, medicine, physics, and chemistry, to representatives of eighteen countries;

Continued a campaign against yellow fever in Mexico, Central and South America;

Prosecuted demonstrations in the control of malaria in ten states;

Coöperated in hookworm work in nineteen governmental areas;

Participated in rural health demonstrations in seventy-seven American counties and in Brazil;

Neared the goal of transferring to French agencies an antituberculosis organization in France;

Provided experts in medical education and public health for counsel and surveys in many parts of the world, and rendered sundry minor services to governments and voluntary societies.

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**Health Conference in China.**—A National Christian Conference was held in Shanghai May 2-11. There were 1,200 official delegates, half foreign and half Chinese. They came from every province and from every Protestant Christian organization in China. The Council on Health Education, at the request of those in charge of the conference, prepared a booklet entitled "Health Pays Dividends," which states the present health conditions in China, which are a retarding influence on every phase of progress; and also that the present conditions constitute a challenge to the Christian forces in that country, for they have it within their means to help bring about a change for the better. In this booklet, Dr. W. W. Peter expresses the opinion that unless the Christian church goes further than the practices of curative medicine upon individual sick, and undertakes the larger public-health problems which extend beyond the individual into the social group, and makes of itself something socially as well as individually practical. it will be cast aside by the world of perplexed but forward-thinking men who are groping for the light whereby men may live together. The Council on Health is doing remarkable work and the Christian church needs such an agency to unite the efforts of those particularly interested in questions relating to health conservation and disease prevention, and to serve in whatever ways it can to interpret modern health ideals in practical terms suitable to conditions in China.

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**The Rebirth of France.**—At the time the Great War was declared France had begun to show alarming symptoms of depopulation. Her decreasing birth-rate was supposedly due to a lax moral sense. The war bled the country to an extent that might have been expected to provoke an even greater depression of moral standards. But now, from all sides, throughout the land comes an explosion of life which expresses the general determination to resuscitate. Paris is taken for an example, as large cities are usually the clearest and most vital proof of what a nation is.

The following table indicates the births and deaths in Paris in 1913 as compared with those of 1920:

| Year | Births | Deaths | Percentage Births of Deaths |
|---|---|---|---|
| 1913 | 48,609 | 44,385 | 109.4 per cent |
| 1920 | 55,770 | 43,057 | 129.5 per cent |

The number of deaths among children placed out of Paris with wet or dry nurses in 1913 was 15,414, or about 31.6 per cent of all births, and only 10,128 in 1920, or about 18.1 per cent of all births. This is particularly interesting when it is remembered that the death-rate is always high when children are placed away from their mothers. The number of breast-fed babies has increased very greatly too.

In 1897 Mademoiselle Chaptal began visiting mothers and children in the 14th Arrondissment in Paris. The great need of young and inexperienced mothers and their babies in this district became more and more evident to her as she studied the situation, and after several years of volunteer visiting work, she resolved to devote her life to ministering to this neighborhood, with the result that a dispensary was started in 1901 out of her own funds. A large mansion surrounded by extensive grounds was acquired and here Mlle. Chaptal transferred her residence and became a vertiable mother to the whole neighbor-

hood. There is now a training school for nurses with an excellent course of nursing for a selected group of young women. A day nursery for children of working women is in operation, and it has become a modern health center for the entire quarter. Four years ago with the coöperation of the mayor of arrondissment, Professor Ferdinand Brunot, the Children's Bureau of the American Red Cross interested itself in starting a plan for reaching all the children of this section, and founded the "Patronage Franco-American," at which time it became apparent that the services of Mlle. Chaptal had for years included all the features of a modern child-health program as we understand it in America.—Dr. J. H. Mason Knox, Jr., Field Director of the American Red Cross, *Mother and Child*, Vol. 3, No. 5, p. 214-216.

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**Division of Welfare of the United States Post Office Department.**—Five days after the Honorable Will Hays became Postmaster General, March 4, 1921, he announced that he planned to "humanize" the postal service, that the working conditions in many places were unsatisfactory, and that great improvement must be made in that direction. He stated that there was no doubt about the quality of the 326,000 employees—they had the ability and the will to do their job well—but, as he put it, "some place along the line the heart had been lost out of the works."

In order to develop a welfare department a conference was held in Washington April 21, 1921. In addition to representatives from all the different sections of the postal service, Dr. D. F. Garland of the National Cash Register Co. and Dr. Lee K. Frankel of the Metropolitan Life Insurance Co., were invited. In June, 1921, in response to Mr. Hays' request, postmasters throughout the country submitted recommendations concerning the welfare division. On June 27, Dr. Frankel was appointed welfare director, and actual operation of the division began with his arrival in Washington on that day. Dr. Frankel organized the National Welfare Council, composed of representatives of the various national associations of postal workers, and a constitution was adopted. In order to ascertain the conditons in post offices throughout the country Dr. Frankel spent six weeks between August 1 and September 15, 1921, in a tour of inspection. During that time he visited more than 100 post offices, including substations, made a number of addresses, and held conferences with postal officials and employees. Especially in the older buildings the conditions were found deplorable. Action is being taken by the Welfare Department to correct conditions as quickly as possible.

The U. S. Public Health Service, by an arrangement with the Secretary of the Treasury, has rendered much assistance to the Division of Welfare. The vision of 500 employees in New York Post Office was tested, a dispensary was established, which will be extended to other cities as funds of the Public Health Service permit, the service being entirely optional with the employees. There are 65 medical and surgical chests ready at Perryville, Md., taken over from the Army, to be sent to 65 of the largest offices that have reported the lack of first aid equipment. Chests will be supplied to other offices, these being too large for the smaller post offices. A sanitary survey was made of the New York City post office by the U. S. Public Health Service. Physical examinations are now being made of postal employees in the Chicago and New York City offices.

On April 7, 1922, Mr. Henry S. Dennison succeeded Dr. Frankel as Welfare Director, both serving without pay. Since Dr. Hubert Work succeeded Mr. Hays, he has been in charge of this work. Expenses of the welfare division have been paid out of general funds, as no specific appropriation has been made.—National Health Council Report on the Division of Welfare of the U. S. Post Office Department, June 1, 1922.

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**Health Councils Hold Joint Meeting.**—The National Child Health Council and the National Health Council both held meetings in the Executive Room of the American Red Cross, Washington, D. C., on May 3. At the meeting of the National Child Health Council, which came first, there were interesting reports of progress on the Child Health Demonstration in Mansfield and Richmond County, Ohio, by Dr. Walter H. Brown, director, formerly of the Health Service of the American Red Cross, and reports on several other pieces of work carried on by the Council, such as the preparation of a Height-Weight Table, a report on an outline of a school-health program, and a statement of the methods for a campaign against malnutrition. The principal business before the National Health Council

was a discussion of the investigation, study, and promotion of state health councils. Already studies have been made in Ohio and Maine, and further surveys will be carried on in other states. In this work, the National Health Council will have the coöperation of the National Child Health Council. Other routine matters, such as reports of committees and of the executive officer, plans for a Health Day in the fall, and a report of the National Exhibit Committee, were considered.

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**National Child Health Council Issues Report.**—The first annual report of the National Child Health Council was issued the early part of May. This consisted of a fourteen-page pamphlet entitled "For the Child, A Venture in Coördination in the Interests of Children." It outlines the formation of the Council, its functions as a clearing house for child health, describes the Child Health Demonstration in Mansfield, Ohio, and concludes with a statement of future plans. The National Child Health Council is one of the members of the National Health Council.

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**New England Health Institute.**—The New England Health Institute was one of the regional institutes suggested by the United States Public Health Service. The State Boards of Health of New England and the Medical Schools of Yale and Harvard Universities joined with the Public Health Service in presenting to the people of New England a school of public health covering the leading activities of the field health worker.

The total registration was 850 and of this number 777 reported at the desk during the Institute. "Three lectures were scheduled for each hour from Monday at 3 p. m. to Friday at 5 p. m. The faculty with but few exceptions contributed their services. Owing to the intensive program, few clinics were given and these were in Hartford institutions. No elaborate field trips were planned, although the opportunity to visit engineering works, industrial and other activities in and about Hartford was accepted by quite a number.

The Institute seemed to be enthusiastically received, and interest grew as the meeting progressed. The starting and closing of the lectures on the scheduled hour and minute was well received and elicited favorable comment. An opportunity was given all registrants to indicate preferred courses, but no effort was made to require strict adherence to the same so long as the required number of lectures (18) were taken by those who desired certificates. The result of this procedure has not yet been analyzed, but with the large and representative faculty, it seems likely that this method resulted in greater satisfaction and more enthusiastic attendance.

At a meeting of the Advisory Board held during the Institute, the following recommendations were adopted:

1. That the Institute be held annually.
2. That a registration fee not exceeding $3.00 be charged.
3. That the next meeting be held in Boston or a city in the vicinity, probably Worcester.
4. That Dr. Eugene R. Kelley be Director for the 1923 meeting.

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**National Exposition of Chemical Industries.**—The Eighth National Exposition of Chemical Industries will be held this year in the Grand Central Palace, New York City, during the week September 11-16 inclusive. It will follow immediately upon the fall meeting of the American Chemical Society. The office of the managers, Charles F. Roth and Fred W. Payne, is in the Grand Central Palace, New York City, and inquiries should be directed to them there.

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**American Association for the Promotion of Public Baths and Hygiene.**—The Association held its eleventh annual meeting in Buffalo, N. Y., May 11 and 12, with convention headquarters in Hotel Statler. The opening address was made by Francis E. Fronczack, M. D., Health Commisioner of Buffalo. Many papers were read on public baths and laundries, athletic agencies, sanitary pools, etc. The meeting closed with a round table luncheon and a sightseeing excursion.

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**Wellesley Research Fellowship.**—A research fellowship of one thousand dollars for the study of orthopedics in relation to hygiene and physical education is offered at Wellesley College. The work on the problem chosen in consultation with the department must be done in residence, except for study and observation of clinical practice. It will begin in September following the acceptance of the applicant and will continue through one calendar year. Those wishing to

apply for this fellowship should send their evidence of preparation and qualifications to the Director, Graduate Department of Hygiene and Physical Education, Wellesley College, Wellesley, Mass.

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**Drs. Frankel and Rosenau to Go on Relief Mission.**—Having succeeded in raising over $17,000,000 additional to relieve their stricken people in Central and Eastern Europe, as well as Russia, the American Jewish Relief Committee, of which Louis Marshall is chairman, has appointed a commission of leading Jewish business men, scientists, bankers, and social workers to go to Europe to study at first hand how far the $50,000,000 hitherto raised for European relief has relieved the situation, and to determine what the plans and methods shall be for the immediate future. The decision to send the commission was reached at the Detroit conference in April, attended by Jewish leaders from every state in the Union.

The commission, which sails on the Cunard liner, Berengaria, June 20, is headed by Dr. Lee K. Frankel, former president of the American Public Health Association, and third vice-president of the Metropolitan Life Insurance Company, which has extended him a leave of absence for this trip. Associated with Dr. Frankel on the commission are David A. Brown, prominent Detroit manufacturer, who was chairman of the National Campaign for Jewish Relief; Dr. Milton J. Rosenau, professor of preventive medicine at Harvard; David M. Bressler, New York insurance man, and chairman of the New York City Jewish Relief Campaign, and Morris Wolf, a leading Philadelphia attorney. The commission hopes to have the advice of Herbert H. Lehman, New York banker, who is now in Europe arranging the reconstruction work of the Joint Distribution Committee, and also of James N. Rosenberg, New York lawyer, vice-chairman of the Joint Distribution Committee.

The reports from the Committee's field workers in Europe show distinct improvements in many sections of Europe, and at the same time tell of extreme suffering in the Ukraine and Soviet Russia, where at least four million Jews are confronted by actual starvation and epidemics. Five million dollars has been alloted by the Joint Distribution Committee, of which Felix M. Warburg, of Kuhn, Loeb & Company, is chairman, for relief work in Russia. The Committee works in close coöperation with the American Relief Administration, of which Herbert Hoover is the head.

The commission will return to the United States about September 1.

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**Compressed-Air Blowers as an Aid to Metal-Mine Ventilation.** — Compressed-air blowers are an aid to metal-mine ventilation in that they do increase the cooling power of the mine air in the immediate vicinity of the blower, and will dilute the noxious gas content of the mine air to a certain extent. The capacity of one of these blowers, approximately 80 cubic feet per minute, while as much as that of a rock drilling machine, is not sufficient to remove the fumes caused by blasting, nor is the cooling effect of the air felt at distances of more than 50 feet from the blower, and then only when directly in the line of the compressed-air stream.

On the other hand, a small, self-contained, electric fan, forcing from 1,000 to 2,000 cubic feet of free air per minute either through a canvas or galvanized pipe, gives instant relief from heat and humidity, and, if a galvanized pipe is used with a reversible fan, the fumes and powder smoke can be instantly removed. The cost of compressing air averages about three cents per thousand cubic feet, and from figures obtained in other districts it was found that it only costs three-hundredths of a cent per thousand cubic feet to supply fresh air by the use of small unit fans and galvanized iron pipe, or less than one-hundredth as much. In one mine, when the change from compressed-air blowers to fan ventilation was established, it was noted that the total cost of ventilating plus the cost of supplying compressed air for the drills was less than the previous cost of supplying compressed air alone and, furthermore, adequate working conditions underground increased the daily production per man almost 50 per cent.

Taken as a whole, the use of compressed-air blowers as an aid to the ventilation of blind drifts, in poorly ventilated mines, is not only futile, but also decidedly more cost-

ly than adequate fan ventilation.—*Reports of Investigations,* U. S. Bureau of Mines.

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**A Zoning Bibliography.**—The Department of Commerce, in response to the needs of over 60 cities in which zoning is in effect, and of over 110 cities which have zoning ordinances in preparation, has just issued a Selected Bibliography of Zoning. This contains critical references to the most important articles on the subject which have appeared in periodicals and books. A special section is devoted to the social and hygienic advantages of zoning, listing several references on its relation to health and living conditions, including W. A. Evans, "Importance of Zoning from the Health Standpoint" (in Report of Proceedings of Chicago Citizens' Zone Plan Conference, 1919). The bibliography may be obtained by application to the Division of Building and Housing, Department of Commerce, Washington, D. C.

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**The Jewish Agricultural Aid Society.**—After a number of years of study, application and service to Jewish farmers and prospective farmers, this Society states in its annual report that it has made over 6,000 loans, amounting to more than $3,000,000, placed numerous laborers, improved the home life of women and children on the farms, and advanced the sanitation in rural districts to a remarkable degree. Its aims are strictly educational. To make the extension of sanitary work possible, a school of sanitation for extension specialists was held during January and February of 1921; lectures were delivered on all branches of sanitation and public health to equip their extension service to carry this work into new fields. In several localities lectures with motion pictures were given to impress upon the summer vacationist the necessity for rural sanitation. Four years of labor in this field in several counties of New York State have called forth many letters of appreciation and endorsement of the work accomplished.

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**Summer School of Occupational Therapy.**—The Byrdcliffe Summer School of Occupational Therapy, Woodstock, N. Y., will be continued this year by master craftsmen under the direction of Miss Bertha Thompson, who has been a director of occupational therapy in army and public-health service hospitals for the past three years. The courses have been planned specially for graduate occupational aides who want further technical training and those who have already had some experience. Instruction will be given as follows: Leather work, weaving, basketry, Miss Thompson. Woodcarving, modeling, pottery, Miss Zulma R. Steele. Metalwork, jewelry, woodwork, toy making, Edward Thatcher. Materials will be supplied to students at cost, all equipment furnished, and accommodations can be obtained at the Inn at Byrdcliffe very reasonably. Application blanks for admission can be obtained from Miss Bertha Thompson, Woodstock, Ulster County, N. Y.

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**Accidents Among Children.**—The Metropolitan Life Insurance Company reports that during 1921 there was a high rate of injuries sustained by children in mines and factories. In spite of safety devices and safety campaigns, one death out of every three of boys thirteen to seventeen years of age who had been gainfully employed, was due to accidents. Of the 199 deaths in this group 43 were from industrial accidents resulting directly from the work in which the boys were engaged. Among those not gainfully employed, one death out of every four was due to accident. The records of the Metropolitan Company are limited to fatal accidents only, but other sources of information bring out clearly the fact that there are a large number of accidents causing permanent and temporary disability of young workers. Some of these sources are cited in the *American Child,* Nov., 1921.

The number of children engaged in industry in the United States is steadily growing. "If," states the Metropolitan Life Insurance Company, "a further analysis of mortality and accident disability of adolescents bears out the findings of this small study that the chief difference between working children and those not gainfully employed lies in their susceptibility to accidents, it certainly is necessary to intensify our safety campaigns in the factories and mills, safeguard our dangerous machines and entirely prohibit minors from engaging in those pursuits, where industrial accident

hazard is greatest."—Statistical Bulletin, Metropolitan Life Insurance Co., March, 1922. (*J. A. T.*)

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**The Book of St. Ultan.**—A new venture in hospital financing. This book is a collection of pictures and poems by Irish artists and writers, published by the Candle Press, Martin Lester, Ltd., Dublin, Ireland. It was issued by a committee of artists and writers of Dublin who gave their services without charge and the publication is sold for the benefit of the New Dublin Hospital for Babies. This hospital is conducted by women physicians; an active dispensary is maintained where instruction in child hygiene is emphasized, and there are two wards at present in which babies are cared for.—John Foote, M.D., Washington, D. C., *Mother and Child*, Vol. 3, No. 5, p. 218.

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## LEGISLATION—FEDERAL

(From bi-weekly reports of the National Health Council, April 15-May 15, 1922.)

PROGRESS ON MATTERS PREVIOUSLY CONSIDERED

Progress Under the Federal Maternity and Infancy Act.—The first meeting of the Federal Board of Maternity and Infant Hygiene as provided by the Act for the Promotion of the Welfare and Hygiene of Maternity and Infancy, which became a law on November 23, 1921, was held on April 18, 1922. Miss Grace Abbott, Chief of the Children's Bureau, was elected Chairman of the Board. The other members are Surgeon General H. S. Cumming of the Public Health Service and John J. Tigert, U. S. Commissioner of Education. The Board approved the final plans of the following twenty-three states for the use of the funds available under the Act: Alabama, Arizona, Arkansas, Connecticut, Delaware, Florida, Georgia, Idaho, Indiana, Kansas, Kentucky, Mississippi, Missouri, Montana, Nebraska, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, Virginia and Wyoming.

Forty-one states have now accepted the terms of the Maternity and Infancy Law, either by legislative act or by proclamation of the governor in the absence of a legislative session. Four hundred and ninety thousand dollars was appropriated by Congress for the fiscal year ending June 30, 1922. For the year ending June 30, 1923, the full $1,240,000 is available.

H. R. 7456. The Tariff Bill and Public Health.—Passed the House July 21, 1921. Reported favorably with many amendments to the Senate by the Committee on Finance, April 11, 1922. This measure contains many items of interest to the medical profession of the country and deals indirectly with public health by levying a duty on many medicines, chemicals used in the manufacture of medicine, drugs, surgical and laboratory instruments, etc.

The bill leaves on the free list the following: antitoxins, vaccines, viruses, serums and bacterins used for therapeautic purposes; barks, cinchona or other, from which quinine may be extracted; books, maps, music, photographs, etc., by institutions for religious, educational, scientific or literary purposes, not for sale, under regulations of the Secretary of the Treasury; borax, crude or unmanufactured; iodine, crude; nux vomica; quinine sulphates and all alkaloids and salts of alkaloids derived from cinchona bark; sodium, nitrate, sulphate, crude or salt cake, and niter cake; teeth, natural or unmanufactured.

H. R. 11228. Navy Department.—Passed the House April 15, 1922.

One of the bitterest fights that has marked the present session of Congress occurred when the Navy Department Appropriation bill was reported by the Committee on Appropriations. The naval personnel was fixed at 67,000, but an amendment was finally added, increasing the number to 86,000. The result will be a continuation of the present number of officers, including the medical corps. This appropriation bill for 1923 contains the following items of interest to public health:

Bureau of Medicine and Surgery

| | |
|---|---|
| Salaries | $ 61,150.00 |
| Medical Department | 2,400,000.00 |
| Contingent | 435,000.00 |
| Care of Hospital Patients | 85,000.00 |
| Bringing Home Remains, etc | 65,000.00 |
| Total | $3,046,150.00 |

The bill is under consideration by Senate Committee on Appropriations pending action by Congress on Army, Navy and Public Health Service pay bill (H. R. 10972) which is now being debated in the House. Senate and House leaders decided that the appropriation bills of both the Army and the Navy could not be enacted into a law by Congress until the question of the pay of the personnel had been settled. These measures, therefore, are

being held in abeyance until a final disposition is made of the Wadsworth McKenzie bill.

S. 3470. Prevention of Venereal Disease in the District of Columbia.—Introduced by Senator Owen of Oklahoma, April 17, 1922. Referred to the Committee on the District of Columbia. This bill is a copy of H. R. 11021 (A. J. P. H. June.) introduced in the House by Representative Gilbert on March 23, 1922.

H. R. 11547. Passed House May 5, 1922; passed Senate May 6, 1922. This bill appropriates $12,000,000 for additional hospital facilities for the U. S. Veterans' Bureau. It also authorizes the director of the U. S. Veterans' Bureau, with the approval of the President, to incur additional obligations not to exceed $5,000,000 for hospital purposes. This bill is supplemental to H. R. 10864 which became a law on April 20, 1922, and which authorized an appropriation of $17,000,000 for additional hospital facilities. (A. J. P. H., June.)

In the report of the Committee on Appropriations the following outline of the hospital facilities to be acquired is given:

District No. 1, New England area; neuropsychiatric cases, 500 beds, $1,500,000.

District No. 2, New York, New Jersey, and Connecticut; tuberculosis cases, 550 beds; general cases, 150 beds; total beds, 700; $2,100,000.

District No. 4, West Virginia, Virginia, Maryland and District of Columbia; general cases, 250 beds, $750,000.

District No. 5, North Carolina, South Carolina, Georgia, Florida and Tennessee; general cases, 200 beds, $600,000.

District No. 6, Louisiana, Alabama and Mississippi; neuropsychiatric cases, 350 beds, $1,050,000.

District No. 7, Ohio, Indiana and Kentucky; neuropsychiatric cases, 500 beds, $1,500,000.

District No. 8, Illinois, Michigan and Wisconsin, neuropsychiatric cases, 1,000 beds, $3,000,000.

District No. 9, Missouri, Kansas, Iowa and Nebraska; neuropsychiatric cases, 500 beds, $1,500,000.

District No. 10, Minnesota, North Dakota, South Dakota and Montana; neuropsychiatric cases, 500 beds, $1,500,000.

District No. 12, California, Arizona and Nevada; tuberculosis cases, 500 beds, $1,500,000.

District No. 13, Washington, Idaho and Oregon; neuropsychiatric cases, 250 beds, $750,000.

District No. 14, Oklahoma, Texas and Arkansas; neuropsychiatric cases, 200 beds, $600,000.

| | |
|---|---|
| TOTAL (5,450 beds) | $16,350,000 |
| Tuberculosis, 1,050 beds | 3,150,000 |
| Neuropsychiatric, 3,800 beds | 11,400,000 |
| General Cases, 600 beds | 1,800,000 |

H. R. 2193. Habit-Forming Drugs.—Passed House May 4, 1922. Referred to Senate Committee on Finance, May 5, 1922. This bill amends the Opium Acts of February 9, 1909, and January 17, 1914. The bill would create a Federal Narcotic Control Board to consist of the Secretaries of State, Treasury, and Commerce, but the administration of the bill would be entrusted to the Treasury Department. Importation of narcotic drugs into this country or its territories would be unlawful except in the case of crude opium and coca leaves for medicinal use as permitted by the Board. Suitable regulations controlling such importation would be prescribed and duties provided. Drugs seized under provision of the Act, due to illegal entry, would be turned over to the Board for medicinal purposes. Exportation of narcotic drugs other than smoking opium, which is absolutely prohibited, would be permitted only to countries having ratified the International Opium Convention of 1912. Penalties are provided for infractions of the law.

H. R. 10101. District of Columbia.—As finally agreed upon by the Conference Committee of both Houses on May 3, 1922, this bill appropriates $250,000 for a home and school for the feeble-minded of the District of Columbia. The sum of $100,000 is made immediately available for construction purposes under plans to be approved by the Commissioners of the District of Columbia. The House has already approved the report of the conferences in so far as it relates to the home for the feeble-minded.

H. R. 10730. Agricultural Bill.—Differences between the Houses of Congress have been settled in conference, and the measure was sent to the White House for the President's signature on May 8, 1922. (A. J. P. H., May.)

H. R. 10972. Pay of Army, Navy, and Public Health Service.—Passed the House May 12, 1922. This bill was brought up for consideration under a special rule in the House, May 8, 1922, and after being debated, was passed on the 12th. An amendment proposed by Miss Robertson, which increased subsis-

tence rates for nurses from 60 cents to $1.20 a day was adopted. Rent money for nurses was raised from $40 to $60 a month. It is estimated that the total ultimate savings by the regulation of pay included in the provisions of the bill will reach $27,500,000. (A. J. P. H., June.)

H. J. Res. 297. Authorizing President to call Conference to Prevent Pollution of Navigable Waters.—Introduced by Representative Appleby March 29, 1922. Reported favorably by the Committee on Foreign Affairs, May 1, 1922. (A. J. P. H., June.)

H. R. 10941. Special Cancellation Stamps for Postoffices.—Passed the House April 3, 1922. Passed the Senate May 6, 1922. This bill will eliminate the necessity in the future of having Congress pass special acts for cancellation stamps when health expositions are held in various cities of the country. (A. J. P. H., June.)

S. 1911. Compensation for Employees.—Passed the Senate June 2, 1921. Favorably reported by the House Committee on the Judiciary, May 1, 1922. This proposed amendment to the United States Employees Compensation Act extends to one year the time for filing of original claims for compensation in cases where the persons affected served in the world war.

H. R. 10496. Free Postal Privileges for Publications for the Blind. Introduced by Miss Robertson, Feb. 18, 1922. Favorably reported by the House Committee on Post Office and Post Roads, May 1, 1922. The bill provides that certain publications for blind persons shall be transmitted through the mails free.

## NEW LEGISLATION

S. 3480. Modification of the War Risk Insurance Act.—Introduced by Senator Calder of New York, April 18, 1922. Referred to the Committee on Finance. Several important changes in the awarding of compensation for war veterans, members of the Army and Navy Nurse Corps and their dependents are included in this proposed legislation. These changes base the right to compensation upon the character of disease from which the ex-service man is suffering. It is specially stipulated that in case any war veterans are shown to have a psychosis, a neurosis, or a psychoneurosis, active tuberculosis, or chronic empyema developing within three years after separation from active military or naval service, they shall be entitled to compensation, regardless of whether these diseases were contracted in line of duty or not. The rate of compensation for total permanent disability is fixed at $100 per month. A provision also prohibits the reduction of compensation of a disabled ex-service man unless a physical examination has been made since the previous rating. There are new regulations contained in the proposed act covering the lapsing of insurance policies. The U. S. Veterans' Bureau upon discharging a patient from a government hospital must furnish him with a statement of the medical finding as to his condition.

S. 3483. Special Policemen for District of Columbia.—Introduced by Senator Ball of Delaware, April 18, 1922. Referred to the Committee on the District of Columbia. Employees of the District of Columbia may be appointed to serve as special policemen by the Commissioners of the District of Columbia without additional compensation in an emergency under the provisions of this bill. This would allow inspectors of the Health Department to be so appointed.

S. 3544. Transfer of Activities of Inter-Departmental Social Hygiene Board to Department of Justice. Introduced by Senator Jones, May 3.

H. R. 11490. Introduced by Mr. Kahn, May 1. Referred to respective Judiciary Committees. This bill provides that the powers and duties of the agents of the Department of Justice be enlarged to include investigations of commercialized vice conditions in the vicinity of army and navy stations or any place where our armed forces or ex-soldiers and sailors may be stationed under the care and authority of the government. This work would be done in coöperation with local authorities. The transfer of the Interdepartmental Social Hygiene Board, which has been carrying on this work independently for the last three years, to the Department of Justice, would be effected by the bill. An appropriation of $325,000 is authorized by the bill.

H. R. 11592. Construction of Rest Camps for Disabled Soldiers.—Introduced by Representative Gallivan, May 9, 1922. Referred to the Committee on Buildings and Grounds. Five million dollars is appropriated by this measure for the acquiring of sites and the construction of rest camps in the various districts of the U. S. Veterans Bureau in order to benefit disabled ex-service men.

S. 3576. Acquiring of Sites for Hospitals and Sanatoriums.—Introduced by Senator Stanley of Kentucky, May 9, 1922. Referred to Committee on Public Buildings and Grounds. H. R. 11588. Introduced by Representative Kincheloe of Kentucky, May 9, 1922. Referred to Committee on Public Buildings and Grounds. These two bills introduced simultaneously in the Senate and the House are identical in language and provide for the protection of the U. S. government in the acquisition of sites for federal hospitals and sanatoriums by condemnation.

CONGRESS AND TUBERCULOSIS

S. 398, S. 1971, S. 3278 and H. R. 10864.—During the year that the 67th Congress has been in session, the subject of tuberculosis has been before it a number of times. On April 12, 1921, the day after the Special Session convened, Senator Ashurst introduced a bill (S. 398) to provide federal aid in caring for indigent tuberculous persons. The bill was referred to the Committee on Interstate Commerce, where it still is. On June 6, 1921, Senator Sheppard introduced a bill (S. 1971) to admit civil employees of the government stricken with tuberculosis to government hospitals. A similar bill was introduced in the House on October 28, 1921, by Mr. Hudspeth. No action has been taken on either bill. A resolution of the National Tuberculosis Association concerning the rehabilitation of tuberculous ex-service men was printed on the first page of the Congressional Record of June 24, 1921.

The act creating the U. S. Veterans' Bureau, signed by the President on August 9, 1921, aside from important hospital provisions, amended the War Risk Insurance Act with reference to tuberculosis as follows:

"An ex-service man who is shown to have an active pulmonary tuberculosis or neuropsychiatric disease (of more than 10 per centum degree of disability in acordance with the provisions of subdivision (2) of section 302 of the War Risk Insurance Act, as amended) developing within two years after separation from the active military or naval service of the United States shall be considered to have acquired his disability in such service, or to have suffered an aggravation of a preëxisting pulmonary tuberculosis or neuropsychiatric disease in such service, but nothing in this proviso shall be construed to prevent a claimant from receiving the benefits of compensation and medical care and treatment for a disability due to these diseases of more than 10 per centum degree (in accordance with the provisions of subdivision (2) of section 302 of the War Risk Insurance Act, as amended) at a date more than two years after separation from such service, if the facts of the case substantiate his claim. This section shall be deemed to be in effect as of April 6, 1917."

Other matters before Congress of special interest to tuberculosis workers include an appropriation in the Agriculture appropriation bill (year ending June 30, 1923) of $2,877,600 for the eradication of tuberculosis in animals; a bill (S. 3278) to provide a school in the District of Columbia for "tubercular" pupils; and finally, the bill (H. R. 10864) appropriating $17,000,000 for increased hospital facilities for veterans, which was signed by the President on April 20, 1922. (See S. 3480.)

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## LEGISLATION—STATE

(From bi-weekly reports of the United States Public Health Service with the coöperation of the National Health Council, April 15, 1922.)

Since all the state legislatures which have been holding sessions have adjourned except those of Massachusetts and Rhode Island, this bulletin will be the last one issued during this year. The Rhode Island legislature will adjourn very soon. The Massachusetts legislature continues until the middle of the summer and those of Louisiana and Georgia meet in May and June respectively. Any data of interest on health legislation in these states will be reported later.

### Maryland

The legislature adjourned at midnight, April 3. Final action on health bills was as follows:

SENATE BILLS

S. 122. Providing for the appointment of a health officer for Allegany County. Passed Senate and amended in the House and passed.

S. 127. Providing for the extension of the Injunction and Abatement Law, relating to places of prostitution. Died in the Senate Committee.

S. 347. Providing for a commission to govern the Eastern Shore Tuberculosis Hospital. Passed both Houses.

S. 380. Relating to the Washington suburban sanitary commission. Passed both Houses.

HOUSE BILLS

H. 219. Amending the law relating to the qualifications of applicants for licenses as pharmacists. Passed House. Amended in Senate and passed. (A. J. P. H., May.)

H. 310. Prohibiting experiments on dogs. Killed in House. (A. J. P. H., May.)

H. 339. Amending the Optometry Law. Passed both Houses with amendments. (A. J. P. H., May.)

H. 417. Repealing Act of 1920 which prohibits the soaking of poultry, after it has been killed, in cold water. Passed both Houses.

**Mississippi**

The Mississippi legislature adjourned on April 8. Progress is as follows:

Mental Hygiene. H. 278, making appropriation for the colony for feeble-minded, passed House. Several other bills were unfavorably reported. Appropriations for insane hospitals were approved. (A. J. P. H., June.)

School Hygiene. A bill requiring sanitary privies at rural schools passed the Senate.

Venereal Diseases. H. 292. Passed, but the appropriation was reduced from $20,000 to $16,000. Bills requiring pre-nuptial examinations (H. 341, H. 704) and prohibition of marriage of infected persons (H. 646, H. 647) were unfavorably reported, as was also a bill penalizing houses of prostitution (H. 819).

**New York**

The following bills have been signed by the Governor and are now laws:

Pr. A. 588, amending Section 921 of the Criminal Code re compulsory maintenance of children, is Chapter 67. Pr. A. 179, amending Section 486 of the Penal Law re expenses of commitment and maintenance of children committed to institutions, is Chapter 95.

Pr. A. 1674, amending the town law re sewer systems is Chapter 163.

Pr. A. 1756, amending the public-health law re practice of nursing. (Chapter 288.)

Pr. S. 1369, amending farms and markets law re skimmed milk and products. (Chapter 365.)

Pr. S. 1181, amending farms and markets law re classification of milk and byproducts. (Chapter 366.)

Pr. S. 1831, amending public-health law re division of maternity, infancy, and child hygiene.

## STATE HEALTH NOTES—GENERAL

**Alabama**

In the summer of 1921 the city of Birmingham, Ala., and the Tennessee Iron and Coal Company completed two swimming pools at Ensley, within the limits of the city and at convenient walking distance from the industrial section, supported by the plants and the mining interests of the company.

The capacity of each pool is approximately 250,000 gallons of water. They are filled with filtered water from the city supply. The water is then pumped from the lowest point in each pool by a centrifugal pump and forced through pressure filters and thence to the ultra violet ray sterilizers, from which it returns to the pool. The water in both pools is turned over every 24 hours, and although the attendance is from 300 to 2,000 per day, bacteriological tests show that the water is satisfactory at all times. To prevent moss and algae from forming the pools are emptied every two weeks and scrubbed.—*The American City*, April, 1922, p. 312.

**California**

The Japanese are particularly susceptible to typhoid fever. The case rates and the death-rates for this disease are higher for the Japanese than for any other foreign-born residents of California. For these reasons the State Board of Health has started an active and intensive campaign for the improvement of sanitary conditions of Japanese vegetable, berry and fruit farms. During March more than 130 of such places were inspected. Insanitary conditions were found on practically every ranch visited. These bad conditions are due to dilapidated vault toilets, open cesspools, lack of plumbing facilities and general uncleanliness. The improvement of such conditions was taken up with the owners of the land, the Japanese tenants and the secretaries of the Japanese associations. The State Board of Health inspectors met with a ready response to their requests that new equipment be installed. The Japanese associations and the tenants of the farms involved showed a marked willingness to coöperate with the State Board of Health in this work.

In most instances the landowners are supplying the material and the Japanese tenants are performing the necessary labor in the installation of new sanitary equipment. To date, more than 109 old cesspools have been

filled in, and 80 new cesspools have been provided. More than 3,000 feet of drainage pipe have been laid and more than 16 sinks have been connected with cesspools. More than 70 toilets have been made fly-tight, 16 old toilets have been demolished and more than 20 new toilets have been constructed.

The Japanese associations have given this matter considerable publicity in the local Japanese newspapers. A published appeal to Japanese farmers urging them to make the sanitary improvements recommended by the State Board of Health has been effective in arousing a splendid spirit of coöperation.—California State Board of Health *Weekly Bulletin*, April 15, 1922.

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Rabies is on the increase in California. Not only are large numbers of animals infected, but a considerable number of human beings have been bitten making it necessary for them to take the Pasteur treatment. A young man residing in Los Angeles was bitten February 27 on the face and wrist, came to the City Health Department March 2 for the Pasteur treatment, which was completed in 21 days, and died an agonizing death on April 21. It is seldom that death occurs when a person has taken the Pasteur treatment within a reasonable time after being bitten, but in this case it is supposed that death occurred because of the severity and location of the bites.

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The *Journal of the American Medical Association* for May 27, 1922, states that arrangements have been made by the San Diego Zoological Society for airplane delivery of antivenom serum to be administered to persons bitten by rattle snakes in Southern California.

### Florida

**MOSQUITOLESS CITIES**
**ADVERTISE**
**THEMSELVES**

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**DO YOUR PART**

The above is a sample of publicity material used by the Florida State Board of Health to combat mosquitoes. Mosquitoes and their agency in the transfer of disease are of a health and economic importance to the people of Florida, second to that of no other group of insects. There are from 30 to 40 species of mosquitoes breeding within the borders of Florida, but only 4 are known as disease carriers. As the only known means of transmission of malaria and dengue fever in Florida is through the agency of mosquitoes, the logical way to control these diseases is to control the mosquitoes. As mosquitoes breed only where there is water, Florida is making a state-wide campaign to destroy all places that could be possible breeding places. The State Board of Health has just published a pamphlet entitled "Mosquitoes and Mosquito Control" by George W. Simons, Jr., Chief Sanitary Engineer of the State Board of Health, and George F. Moznette, Entomologist, Bureau of Entomology, U. S. Department of Agriculture.

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The Bureau of Communicable Disease, directed by Dr. George A. Dame, has entered upon a state-wide campaign of education in regard to smallpox and vaccination. Motion pictures and lectures will be used by the District Health Officers to combat a very active anti-vaccination propaganda which has been carried on for some time.

Through the efforts of Dr. Joseph Y. Porter, Sr., City Health Officer of Key West, thousands of school children and others have recently been vaccinated. That city is now practically immune to smallpox.

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The Flagler System of Railways and Hotels has, through the efforts of Capt. W. H. Gillette of the United States Public Health Service, attached to the Bureau of Communicable Disease, adopted the Industrial Plan for combating venereal disease amongst its several thousand employees and their families. The State Board of Health will be able to reach at least 25,000 people through the media of lectures, motion pictures, pamphlets, posters and clinics which will largely be supplied by the officials of the company.

### Illinois

Of the 101 counties under the jurisdiction of the Illinois Tuberculosis Association, 98 have formed local associations. Sixty counties of Illinois employ full-time tuberculosis nurses, and others have part-time service. Surveys have been made in practically every county; 14 counties have erected tuberculosis sanatoria, 4 are in course of construction; 27 others have the power to construct or provide

care by taxation, and 3 municipal sanatoria are in operation. Seventy counties have the Modern Health Crusade in operation; there are many open-air schools, nutrition classes, permanent clinics, and dispensaries, with occasional diagnostic clinics held in connection with the State Association. This summer there will be two two-day conferences held by the State Association, one in the north and one in the south of the state. The death-rate from tuberculosis for the past year in Illinois was 85.1 per 100,000. The State Association has recently published a pamphlet calling attention to the fact that Illinoisans have been in the vanguard of the great migration to the west and southwest, and advising them to remain at home among friends unless they have funds to maintain themselves in another state which has not the facilities to provide for its own tuberculous people, much less for those of other states.

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The Jackson and Saline County medical societies recently held special meetings at Carbondale and Harrisburg, respectively, for the purpose of discussing public-health problems and policies with representatives of the State Department of Public Health. Subjects brought up for consideration embraced the reporting of births, deaths, and cases of communicable diseases, urban, school, and rural public-health nursing services, and the public-health duties of practicing physicians to individual families, to the community, and to the state. Along with these topics the subject of state medicine was brought up and it was made clear to the physicians present that the State Department of Public Health is definitely opposed to state medicine in any form. It was further pointed out that the policy of the Department of Health is to develop a mutual, positive coöperation with the practicing physician. As a result of the meetings the policies of the State Department of Public Health as established by Dr. I. D. Rawlings, director, were unanimously endorsed *in toto* by the two societies. Both meetings, which were described by the respective presidents as the most inspiring sessions held in many months, were well attended. Drs. Thos. H. Leonard, S. S. Winner, C. W. East, and Elizabeth B. Ball discussed public health from the point of view of the State Department of Public Health while every member present had something to say from the standpoint of the medical profession.

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The erection of a public-health district was the topic discussed by Dr. S. S. Winner of the State Department of Public Health before an audience composed of city and county officials and local business men in Galesburg on May 10. As a result of the meeting, which was brought about through the efforts of Dr. Fred K. Hall of Galesburg, the Elks Club of that city has inaugurated a campaign in favor of the proposition, and according to the plans the question will be submitted to a vote of the people at the next regular election. If carried, a public-health district will be established in keeping with a state law that provides for a tax levy sufficient to employ a full-time health officer and such supplementary personnel and equipment as is necessary for the organization and operation of an efficient public-health service. At the present time there are two such public-health districts operating in Illinois, one embracing the cities of La Salle, Oglesby, and Peru, and the other the township of Quincy in Adams County.

✣

Definite arrangements have been completed for installing new or additional public-health nursing services at Carbondale and Murphysboro in Jackson County, at Anna in Union County, and at Harrisburg in Saline County. A like service has been decided upon for the rural territory in Jackson County, while Saline County has the proposition under serious consideration. These developments are the results of three luncheon meetings held locally under the auspices of the State Department of Public Health. All city and county officials who were concerned in any way with the proposition at the different places were present. The State Department of Public Health was represented by the assistant director, the chief district health superintendent, and the supervising nurse. Representatives of the local medical societies, the public schools, women's clubs and parent-teachers' associations were also present. Meetings with the same object in view were scheduled for Franklin and Marion counties. The whole project is the outcome of a determination on the part of the State Department of Public Health to meet in the most practical way possible a long

existing need for a more adequate public-health service in southern Illinois.

✣

At a meeting held in Chicago on May 2 representatives of the State Department of Public Health, the Illinois Central Railway Co. and the U. S. Public Health Service, it was agreed that the Illinois Central Railway Co. would actively coöperate in the proposed plan for draining a large area of territory in the vicinity of Carbondale for the purpose of destroying the breeding-places of malaria-carrying mosquitoes. Eight thousand dollars was the estimate of the probable cost of the undertaking made by the railway engineers, and provision was made that the State Department of Public Health should handle all matters involved in obtaining ditching rights through private property. The railroad was represented at the conference by the first vice-president, the chief surgeon, and two sanitary engineers. In behalf of the State Department of Public Health the director, the chief sanitary engineer, and two members of the advisory board appeared. The U. S. Public Health Service was represented by a medical officer and a sanitary engineer. Efforts are being made to start the drainage work at Carbondale without further delay.

✣

Through the coöperative efforts of the State Departments of Public Health and Public Welfare, arrangements have been completed for the establishment of a trachoma clinic at Anna. A special ward of 15 to 20 beds and a special nursing personnel has been provided by the Anna State Hospital for indigent surgical cases. The opening of the clinic is the outcome of a survey recently conducted under the direction of the State Department of Public Health by Dr. A. B. Troupa, of the Chicago Charitable Eye, Ear, and Nose Infirmary, who reported 116 positive and suspect cases of trachoma out of 300 school children examined.

✣

Dr. Isaac D. Rawlings along with a number of other state officials made a survey of the flooded areas in the Illinois River Valley on April 26 to determine the magnitude of sanitary, relief and rehabilitation problems that have arisen at several points on account of unusual inundation. As a result several additional physicians attached to the State Department of Public Health have been detailed for duty in the valley with instructions to carry out vigorously the sanitary precautions that are indicated. Particular emphasis is being laid upon the protection of drinking water supplies and the safe disposal of wastes. Every possible means is being employed to encourage general vaccination against typhoid fever. All of the various public-health and relief agencies operating on a large scale in Illinois are now in the field and are working harmoniously together.

✣

A second attempt to create a strong public-health organization of an extra-governmental character in Illinois was the purpose of a meeting recently held in Chicago. The various agencies represented, which included the State Departments of Health, Education, Public Welfare, the Illinois Tuberculosis Association, the Illinois Society for the Prevention of Blindness, the Illinois Society for the Control of Cancer, the Illinois Child Welfare Society, the Illinois Social Hygiene League, the Illinois Federation of Women's Clubs, the Illinois State Medical Society, and the Illinois Hospital Association, indicate the powerful influences that speak favorably for the success of the proposition. The discussions ended in a decision to organize the Illinois Health Society and temporary officers, with Dr. William A. Evans of Chicago as president, were chosen. A state charter has been obtained and meetings for the board of directors scheduled.

✣

A public-health unit is to be established in Morgan County. The initial personnel of the organization will consist of a full-time county health officer and two rural public-health nurses. The operating expenses of the public-health unit will be partially borne by the International Health Board.

✣

Thos. G. Hull, Ph.D., superintendent of the diagnostic laboratories of the State Department of Public Health, has been appointed by Surgeon General Cumming of the U. S. P. H. S. as assistant collaborating epidemiologist for Illinois.

### Indiana

Dr. J. N. Hurty has resigned from the secretaryship of the State Board of Health, to take effect September 30, as he has been nominated for the State Legislature. It is his aim to secure an all-time health officers' law for Indiana. He received the highest vote in the

primaries of any of the 11 candidates nominated from Marion County (containing Indianapolis) by 2,000 votes. All of these have pledged their support to his health legislative program, and the prospects of its success are bright.

✣

The judges of the Appellate Division of Indiana class typhoid fever with preventable industrial diseases. They hold that because an employee became ill with typhoid from drinking impure water furnished in his employer's factory he is entitled to compensation, just the same as though he had lost a finger by an unguarded machine, or any other industrial accident.

### Iowa

Dubuque, Iowa, has adequately protected its main business district from the scourge of fire and provided for the health of citizens, through the completion of a 7,500,000-gallon covered reservoir located on an eminence 250 feet above the valley business center, and a few blocks away from the main factories and business places. It was completed several years ago, but, because of its open top, it was impossible to keep the water clean. The fire hazard was greatly increased when it was put out of commission for cleaning every ten days or so.—*The American City*, April, 1922, p. 317.

### Kentucky

"Not a morsel of food for a fly to light upon" is the slogan and the achievement of Lexington, Ky., in the construction of a modern market house that is the last word in science and sanitation so far as consolidated markets are concerned. The building is a model of compactness, convenience and completeness. Before tenants are permitted to take over the stalls, all fixtures are set up, including cash registers and scales, and are uniform throughout. Sealed glass cases of newest type are used for holding and displaying perishable wares, and the entire basement is given over to the operation of a refrigerating plant and dry storage, with individual spaces for the tenants. The project originated in the Lexington Board of Commerce and was worked out under the direction of Dyer J. Lockwood and an engineering corporation experienced in such work.—C. F. Dunn, Board of Commerce, *The American City*, April, 1922, p. 371.

### Maine

Beginning in February, 1922, the Maine State Department of Health has begun to reissue its health bulletin after having discontinued it for a year or more.

### Maryland

For twenty-one years Baltimore has run, in connection with its public bath-houses, public laundries. Located in the center of a thickly populated district, the first one was open four days a week to women and two days to men, but due to the number of men taking advantage of this opportunity, it was eventually made exclusively for men. The men who frequent the public laundries are often oyster dredgers up from a long trip down the bay, odd job men from cheap lodging houses, or tramps who have heard from other travelers of the road of a chance to clean up. If a man is able to pay, ten cents is charged for a towel, a cake of toilet soap and a ticket which entitles him to a bar of laundry soap and the privilege of using one of the tubs, where he proceeds to wash his clothes. In four other public bath-houses laundries were installed, where women could do their entire family wash in four hours at a cost of 28 cents, while their children were taken care of in adjoining playgrounds.

Mr. Robert F. G. Kelley, secretary and superintendent of the Free Public Bath Commission of Baltimore, recommends that wherever a city contemplates installing public laundries there should be playgrounds adjoining where mothers may leave their children, and that great care should be exercised in the selection of employees, as poor employees often keep patrons away. It is conceded that of such institutions in the United States five of the best are in Baltimore. Laundries are of vital importance to a city. Affording people an opportunity to be clean gives them an appreciation of health and decency and enhances their moral and spiritual tone.—*The Nation's Health*, May, 1922, pp. 179-280.

### Massachusetts

Dr. Leland French has been appointed District Health Officer in the Berkshire District. He was formerly epidemiologist in the Division of Communicable Diseases.

✣

The Attorney General of Massachusetts has rendered his judgment that the Sheppard-Towner Act is unconstitutional.

The State Department of Public Health and the State Department of Education have recently held conferences in the different normal schools for superintendents and school nurses on the subject of school hygiene.

### Michigan

Tuberculosis has today sunk to the rank of the fourth most important cause of death in Michigan, being surpassed by cancer, heart disease, and pneumonia, according to recent studies of the State Department of Health.

Ninety-three fewer persons died from tuberculosis in the state during the first three months of 1922 than in the corresponding quarter of 1921, department records show. The 1922 total is 670, equivalent to 68.2 deaths among every 100,000 of the population. This is the lowest tuberculosis death-rate ever reached in Michigan, authorities say, and one of the three or four lowest in the country. With 763 deaths in the same period the preceding year, the rate stood at 79.6, or 11.4 more deaths to every 100,000 persons.

Of the 670 deaths this year, 434 occurred in the state outside of Detroit, and correspond to a rate of 60.9. Detroit reported 236 deaths, giving the city a rate of 82.5. The average rate for the state for 1921 was 71.6.

✣

Miss Lucile Moore, R.N., a graduate of George Peabody College for Teachers, Nashville, Tenn., the Vassar Training Camp for Nurses, and Mt. Sinai Hospital, has been appointed assistant director of the Bureau of Education of the Michigan Department of Health.

Arthur Haw, B.S., Harvard, '13, and M.S., Illinois, '18, is acting as bio-chemist of the Michigan Department of Health.

### Missouri

The Tuberculosis Society of St. Louis, incorporated under the laws of the State of Missouri, is organized with 40 directors, elected annually, who upon their election choose their own officers and chairmen of standing committees. The society is managed by an executive committee composed of the officers, chairmen of the standing committees and two members of the board at large. The society has been in existence for 18 years and has recently conducted a very successful campaign, one part of which was the sending out of letters to 1,100 women, members of the Town Club, and 1,500 men, members of the City Club.

The State Board of Health of Missouri has created an engineering division and has secured the services of Mr. George W. Putnam, as State Sanitary Engineer, to head this new division.

Mr. Putnam has had considerable experience in state board of health engineering work, both with the Minnesota State Board of Health and the California State Board of Health. During the war he was engaged in water supply work in the Sanitary Corps of the Army. His activities also have extended into the field of selling water-softening apparatus.

### New Hampshire

The annual meeting of the New Hampshire Medical Association was held in Concord, lasting two days, and was well attended by the general public as well as by the profession.

One of the most important points of discussion was the proposed change of the Dartmouth Medical School from a two-year back to a four-year course.

✣

During the summer session of the Keene Normal School a splendid opportunity is offered by the State Board of Education to school nurses to study some of the subjects which will be most useful to them in their work and to listen to special lectures covering all phases of school nursing.

The plan of work as outlined is most interesting and comprehensive and cannot fail to have a broadening influence on the general public-health program.

✣

The Nursing Division of the New Hampshire Board of Health presents the following program and clearly defines its relation to official and non-official health agencies as well as to the general public:

1. To coördinate more closely the work of the State Department of Health with official and non-official health agencies, and to assist and coöperate in all possible ways.
2. To plan and develop health programs.
3. To arrange health exhibits, especially in connection with the welfare of maternity and infancy.
4. To give definite help to public-health nurses in their respective communities by assisting them in educating the public and awakening the interest of their people in health matters in general by means of educational literature, illustrated lectures, moving

pictures and health exhibits and posters. (Free of charge except for transportation.)

5. To devise ways and means of carrying on surveys, and to investigate causes and maternal and infant mortality.

6. To carry on in a carefully selected rural community an intensive prenatal postnatal and child welfare program in order to demonstrate to the people of New Hampshire the value of the work, and the great need for the better protection of mothers and infants.

7. To arouse the interest and secure the coöperation of every person in New Hampshire in this most vital cause, and especially to secure the coöperation of every nurse and public-health worker in order that we may lower the maternal and infant death-rate in our state.

✚

The program of the New Hampshire Tuberculosis Association for 1922, approved by the executive committee at a recent meeting, covers the continuing and developing of the present state-wide system of tuberculosis clinics and nursing service in an effort to locate every case of tuberculosis in the state, to continue the education program with reference to tuberculosis and as to the need for additional institutional facilities for such sufferers, and to demonstrate that need by a further development of the state tuberculosis survey. Finally they aim to expend in conjunction with other health agencies every means for building up resistance to disease in general and tuberculosis in particular.

In all clinics children found to have active tuberculosis are excluded from schools and as far as possible admitted to sanitariums, and those found to be 7 per cent below normal weight, whether tuberculous or not, are put upon routine treatment for malnutrition. All work of this character is done by physicians who are specialists in their respective lines, and also by graduate nurses.

It is planned to place a graduate nurse who has had actual experience in nutrition work in some center in the state. In coöperation with school authorities she will endeavor to bring all children in two or more schools up to standard weight. This is in the endeavor to prove to the public the importance of educational work along nutrition lines. The Modern Health Crusade will, of course, be continued as good results have been secured through this method of developing health habits.

### New Jersey

Dr. William H. Park, director of the Bureau of Laboratories of the New York City Health Department, has been engaged by the Board of Health of Montclair, New Jersey, to make a survey of methods of handling milk consumed in Montclair, and to draw up a new milk ordinance to replace the one now in force.

### New Mexico

That New Mexico is well in the lead in county health work is shown by a report recently issued by the U. S. Public Health Service, according to a bulletin of the New Mexico State Bureau of Public Health. This report covers the year just past and indicates which states have provisions for full-time health officers serving the rural populations. New Mexico ranks tenth so far as the number of counties having such health service is concerned. When the percentage of rural population reached is taken into consideration, this state ranks sixth. These figures were for last year. It is interesting to note that the five states leading in respect of rural population reached are Vermont, Ohio, North Carolina, Alabama, and Washington. Such states as New York and Massachusetts, which would be expected to have the highest grade of rural health work, do not appear in the list at all.

### New York

On May 11 at the Holtel Biltmore the State Charities Aid Association celebrated the fiftieth anniversary of its founding in the home of Miss Louisa Lee Schuyler, a great-granddaughter of Alexander Hamilton, at 19 West 31st Street, New York City, by a few public-spirited men and women who realized the obligation of the public to see that institutions are so conducted as best to promote the ends for which they are maintained.

In the records of this association is to be found the fruit of organization and accomplishment. Because it has worked with system, the association is responsible for the facts that the insane are now cared for and treated in asylums, instead of merely languishing in poorhouses, that victims of tuberculosis are treated efficiently, that the first training school for nurses in America was established in Bellevue in 1873, that improvements in child care have been brought about, and, largely, that the city has a public-health law which means protection to millions. These are con-

structive achievements which could not have been gained without organization.

The membership now numbers 12,000 citizens, representing all the counties in the State, and has become an institution of which all New York people may well be proud.

✣

During 1921 the Public Health Council of New York enacted several amendments to the Sanitary Code, the most important of which are as follows:

1. Owing to the fact that complete sterilization is frequently impossible without actual destruction, the manufacture or sale of shaving brushes made from horsehair was prohibited by Regulation 6a of Chapter VII.

2. Regulation 41a of Chapter II provides that the local health officer must report immediately to the State Department of Health whenever the existence of an outbreak of diarrheal disease comes to his attention.

3. Regulation 2b of Chapter II requires the health officer to confine or destroy any animal suspected of being affected with rabies. If the animal is killed the head must be sent to the State Veterinary College at Ithaca for examination.

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As a result of a course of lectures on Health Conservation delivered by Benzion Liber, M. D., Dr. P. H., editor of *Rational Living*, at the New York Labor Temple, a preventive dispensary was opened there by Dr. Liber on April 18 under the name "Health Conservation Center." The center will not be a dispensary in the usual sense of the word. Patients with definite symptoms of disease and those who need treatment will not be accepted. But all those who want information concerning individual questions of health, food, living rooms, clothing, bathing, rest, exercise, intimate and married life, pregnancy, hygienic habits, child care, working conditions, the use of the spare time will be examined if necessary, and will obtain the advice suitable to their cases. The service will be free of charge.

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At the recent annual meeting of the National Tuberculosis Association, Mr. John A. Kingsbury, Secretary of the Milbank Fund of New York City, announced that practically the entire income of the $10,000,000 in that fund would be devoted to a series of community tuberculosis demonstrations. The amount available would range from $300,000 to $400,000 per year. The demonstrations will be conducted in three or more communities of New York State.

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Eleven tuberculosis hospitals in New York State have adopted occupational therapy as part of their regular treatment, as a result of the demonstration made in each of them by the State Charities Aid Association.

Twelve occupational aides are now conducting workrooms and shops in county hospitals with 500 patients daily under their supervision.

Governor Miller recently signed a bill authorizing a county or city maintaining a public general hospital or a sanatorium for the treatment of tuberculosis to establish an occupational therapy department in connection with the institution. Experiments with ex-service men in army hospitals showed it was invaluable for tuberculous patients. Every hospital under the Veteran's Bureau has a strong occupational therapy department for tuberculous men, mental cases, and those with orthopedic injuries.

The State hospitals for the insane are doing much excellent work along the same lines, though on a limited scale. The appropriation this year is $13,700, which will permit the appointment of a director and five or six aides in different institutions where intensive demonstrations will be made. It is the hope of the State Hospital Commission to reach especially the difficult patients through curative handicrafts.

✣

The author reports the occurrence of a localized outbreak of jaundice near Cooperstown, N. Y. Fourteen cases occurred among 36 pupils in a one-room school, and in addition 4 cases in their immediate families. The mother of 2 of these sick school-children was taken to a hospital for delivery. Within the following month, 3 out of a staff of 16 nurses in this hospital developed jaundice, and in addition 3 other nurses became ill, but without jaundice. Seven of the 8 nurses affected had cared either for the ill woman or for a nurse ill with jaundice. There were no other cases of epidemic jaundice in the vicinity during this outbreak. The clinical picture as it appeared in these cases is similar to that usually

reported in other outbreaks of epidemic or infectious jaundice in the United States and England. It appears that the outbreak here described was spread by contact from person to person.—H. Williams, *N. Y. State Jour. of Med.*, Apr., 1922, 150. (*D. G.*)

✣

Dr. Herman M. Biggs, State Health Commissioner, is at present in Europe and will return about the middle of June.

Under the Davenport Act, the Division of Child Hygiene becomes the Division of Maternity, Infancy and Child Hygiene. The appropriation for the division is $160,000. Dr. McKay is still director.

A new addition is to be made to the State Laboratories which will cost $90,000.

The annual conference of Health Officers and Public Health Nurses will be held June 27-29 in Saratoga Springs, with headquarters in the Grand Union Hotel.

The Public Health Education Division has purchased the following new films: "The Knowing Gnome," "Come Clean," "Every Woman's Problem," and "Mrs. Brown vs. High Cost of Living."

✣

At the annual meeting of the New York Nutrition Council, held at the Russell Sage Foundation recently, a report of the Committee on Statistics entitled "Height and Weight as an Index of Nutrition," was presented by John C. Gebhart of the New York Association for Improving the Condition of the Poor. This report is of great practical value to nutrition workers and has been issued for the New York Nutrition Council by the A. I. C. P., 105 E. 22d St.

The report of the Committee on Economic Standards was presented by Lucy H. Gillette, Chairman. This report outlined "A Food Budget as Related to Social Work," and gave "Fifteen Points for the Social Worker," engaged in nutrition work. This report has also been printed and can be secured from the A. I. C. P.

✣

The Associated Out-Patient Clinics of New York City, organized in 1912 as a federation of out-patient departments of the leading hospitals of the city, together with a number of dispensaries unattached to hospitals, recently resumed activity after an enforced lapse during the war. The dispensaries of the city have grown rapidly during recent years, it being estimated that 1,250,000 persons received dispensary care in New York City during 1921. Hence, the Associated Clinics feels an increasing responsibility to accomplish the purpose for which it was founded: the advancement of the standards and methods of out-patient work and the coördination of the many existing dispensaries and out-patient clinics of the city. The office of the Clinics is in the building of the Academy of Medicine, 17 West 43d Street, New York.

The Venereal Disease Section some years ago worked out standards which have been adopted in the sanitary code of the New York City Health Department. This section is now preparing instruction sheets for patients and record forms for venereal clinics.

The Ophthalmology Section is making a study of professional methods, equipment, and follow-up service in the eye clinics of the city, with the expectation of formulating standards for eye clinics in the near future.

Before the war the Pediatric Section prepared standards for children's clinics. These are now being revised with the aim of classifying existing clinics and assisting some local institution in operating a model demonstration pediatric clinic.

The Socal Service Section has finished a survey of 54 social service departments in New York City, and is now coöperating with the Venereal Disease Section with the aim of advancing standards and improving methods in this adjunct of clinic efficiency.

The Hospital Conference of New York City has agreed to act as a Section of Administration of the Association.

### North Carolina

The North Carolina Public Health Association held its twelfth annual meeting in Winston-Salem, Monday, April 24. The address of the president, Dr. L. J. Smith, of Wilson, was on "A Need, a Vision and an Ideal." Papers were read on a number of important subjects.

### Ohio

The Cincinnati Public Health Federation in its Bulletin of February-March, 1922, reports great accomplishments for the past year, among which were the follow-up of emigrants, survey of hospital facilities for children, publication of a bulletin of information service for coöperating agencies, the maintenance of a speakers' bureau, and finally the undertaking

of the Cincinnati Health Exposition, an unsurpassed contribution to the health movement. There are a number of divisional councils, each taking care of a particular class of work such as mental hygiene, cancer control, child hygiene, better housing, tuberculosis prevention and control, nursing and social hygiene. The council for better housing reports having made 5,838 visits during the year 1921, having moved many families to better locations, and having induced many owners to better conditions and reduce rents. The council on tuberculosis reports a great decrease in the number of deaths due to tuberculosis in Cincinnati, and a greater number of those infected being taken care of in hospitals. They are making every effort to reach the incipient cases, and provide places where they may be treated without coming in contact with the distressing conditions which surround a tuberculosis hospital. The plans of the Federation for 1922 cover a still more extensive program.

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In Dayton the public-health nursing service operates with ten nurses of the Visiting Nurses' Association and ten city nurses under the supervision of the Visiting Nurses' Association and the Commissioner of Health. They do all kinds of nursing in their districts except school work. A card with a certificate of birth is taken to the home of every child, whether of well-to-do or of indigent family, whose birth is reported. This gives the nurse entry into every such home, as the infant hygiene record cards can be obtained in no other way.—*The American City*, April, 1922, p. 322.

### Philippine Islands

According to a recent number of the *Monthly Bulletin* of the Philippine Public Health Service, the School of Public Health of the University of the Philippines is to be reopened. A degree of Doctor of Public Health or its equivalent will be conferred upon all candidates who successfully complete the course.

### Texas

Dr. John H. Florence, the newly appointed state health officer of Texas, was born in Texas. He received his medical education in Louisville, Ky. He was in general practice for ten years. He served four years as county health officer of Dallas County, and four years as city health officer of Dallas; afterwards with the State Health Department as assistant state health officer and quarantine officer at Galveston. He was acting marine hospital surgeon for two years at Brownsville, Texas, detailed for immigration duty. He was medical director and vice-president of the Great Southern Life Insurance Company for ten years, and was appointed state health officer January 20 of this year.

DR. J. H. FLORENCE

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The State Board of Health of Texas considered it necessary to maintain an adequate supervision of the public water supply of that state. That there was a special need for such control was shown by 2,000 estimated deaths from typhoid fever in 1918, lack of sufficient travel appropriations for the state sanitary engineers to inspect all water plants and lack of adequate legislation covering the sanitary protection of water supplies. In order to improve the control of water plants, the State Board of Health, University of Texas, and Baylor University coöperated in conducting four schools for operators of water plants. These courses, for which no tuition fee is charged, are outlined for two weeks and include practical work as well as methods. In abstracting an article describing this work, the *Public Health Engineering Abstracts* for May 6, 1922, states that the success of the Texas

school has induced the state of Oklahoma to adopt the same method of helping to protect its water supplies.—L. O. Bernhagen, Sanitary Engineer, Beaumont, Texas. *Journal American Water Works Association*, Vol. 9, No. 2, March, 1922, pp. 300-6.

### Wisconsin

Dr. William Waldo Bauer, Milwaukee, has been appointed epidemiologist for the Milwaukee Health Department, succeeding Dr. C. J. Kenney, resigned.

Dr. I. F. Thompson resigned as epidemiologist for the Wisconsin State Board of Health, to accept appointment as deputy commissioner of health of the City of Milwaukee. He succeeds Dr. E. V. Brumbaugh, who became full-time health officer of Madison, Wis.

The Wisconsin State Board of Health has apopinted Miss Aimee Zillmer, of Milwaukee, as assistant in education for lecture work in social hygiene and related subjects. Miss Zillmer's last work was with the White-Williams Foundation, at Philadelphia.

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The motorized child health center, known as the Child Welfare Special, recently built for the Wisconsin State Board of Health, toured Rock County in April and Grant County in May, giving physical examinations for infants and preschool children. Other counties on this year's schedule are Sheboygan, Manitowoc, Oconto, Oneida, Bayfield, Portage, Monroe and Juneau. The pediatric work is done by Dr. Blanche Horner-Rivers, formerly in similar work in Mississippi. Mrs. Johanna Clark, Fort Atkinson, Wis., is nurse assistant.

Dr. F. F. Bowman, deputy state health officer for the first district, Wisconsin State Board of Health, has been made epidemiologist in the department to succeed Dr. I. F. Thompson. Dr. G. W. Henika, formerly with the department, has returned to be deputy in the first district.

✚

The biennial conference of Wisconsin health officers and the annual conference of public-health nurses will be held jointly this year at Madison, the State Board of Health having set the date for August 14-18.

The Bureau of Child Welfare and Public Health Nursing of the Wisconsin State Board of Health is sending a series of nine prenatal letters monthly to expectant mothers, upon receipt of names furnished by public-health nurses.

Miss Cornelia van Kooy, state advisory nurse in the Bureau of Child Welfare and Public Health Nursing, Wisconsin, has resigned to return to her work with the Wisconsin Anti-Tuberculosis Association at Milwaukee.

Dr. Hugo C. Reich, health officer of Sheboygan, Wis., since 1904, died from heart disease early in May.

Dr. A. H. Broche, formerly health officer of Oshkosh, Wis., has been elected again to that post to succeed Dr. Bertha V. Thompson.

Dr. W. W. Johnston has been elected health commissioner of Racine, Wis., under a plan of organization of the department which diverts authority in the health administration from the chief of police to the health officer.

✚

The Wisconsin Industrial Commission has ruled that tuberculosis acquired as a result of occupational duty is compensable under the "Occupational Disease Amendment" enacted by the 1919 Legislature. The case was that of a "wet grinder" in a factory, who inhaled dust and fine particles until tuberculosis developed.

Mrs. Barbara Fletcher, Blue Island, Ill., has become county nurse for Grant County, Wisconsin, to succeed Miss Agnes Smith, who resigned to enter public-health work in Brazil.

### Wyoming

Dr. J. F. O'Donnell, Director, Division of Venereal Diseases, resigned May 1, and will devote his entire attention to county health work, his private laboratory at Casper, Wyo., and the State Board of Health.

The Wyoming Tuberculosis Association is making plans to secure the success of a bill on state sanitaria for tuberculosis patients authorized by the Legislature of 1921.

Miss Agnes Cozon, A. R. C., collaborating with Wyoming State Board of Health, resigned May 1, 1922. Miss Cozon has been in charge of Red Cross nursing in Wyoming for the past two years.

The New War Veterans Bureau Hospital at Ft. McKinzie, Sheridan, entirely for psychiatic patients, opened to receive patients May 21.

The Francis E. Pershing Memorial Hospital, one of the most modern hospitals in the Rocky Mountain region, with 140 beds, began receiving patients May 1.

# INDUSTRIAL HYGIENE AND OCCUPATIONAL DISEASE

Abstracted by Drs. E. R. Hayhurst and E. B. Starr.

**Sickness Among Office Workers.**—A large western corporation, during the year ending January 31, 1921, in which it employed an average of 1,282 office employees, and kept an exact record of the hours of work lost by each person from sickness or injuries, found that the annual loss was 8.15 days per person. The sickness was diagnosed by the medical department or by the family physician.

This compares with the estimate made by the committee on industrial waste of the Federated American Engineering Societies, which reported that "the 42,000,000 men and women gainfully employed in the United States probably lose on an average more than eight days each annually from illness disabilities."

The fact that the majority of the 1,282 office employees were women, whose sickness rate is usually higher than that of men, and that a loss of about two days per person was caused by influenza during the epidemic of February, 1920, are two factors which tend to make the sickness rate in question higher than the average rate for workers in a normal year. On the other hand, the fact that the average age of the office employees was only 23.7 years, that clerical and executive work is relatively free from health hazards, and that the health of the group was carefully guarded medically, would tend to make the rate in question lower than the average rate for the gainfully employed. Allowing for these factors, the author of the report concludes that the eight-day estimate of the committee of the engineering societies for all workers probably is not too high.—*Health News*, U. S. P. H. S. (K-114; CJI), April, 1922.

✣

**Causes of Absenteeism in the Pulp Paper Mill.**—In 1921 the Mead Pulp and Paper Company, Chillicothe, Ohio, found that the total lost time in the mill for various reasons averaged 8.3 days per man for the whole year, excluding vacation time. The figures are based on 144 men. The amount of wage lost was $16,000. An analysis of the causes of absenteeism showed as follows: sickness, 4.75 days; accidents, 1.16 days; personal reasons, 2.05 days; reasons unknown, .39 days; in addition each man out of the 144 received an average of 7.2 days vacation. Persons entitled to this vacation must have been in the employ of the company at least three years before becoming eligible. "Particularly under the heading of 'days lost because of accident,' did we make an exceptionally poor showing last year. Basing our statement on the fact that in another plant of this company, where the work is even more hazardous than in this plant, we find that the average number of days lost in that plant because of accidents was .45 days per man—this, too, in a plant employing 6,700 persons.

"From the above information, then, it can readily be seen that we are losing entirely too much time in our mill, for which there is no reasonable excuse. It is up to all of us individually to try and keep our absentee figure down as low as possible, thus benefiting ourselves as well as all those around us, and the company at the same time."—*Mead Co-Operation*, Feb., 1922, Vol. IV, No. 8, pp. 26-27.

✣

**United States Steel and Carnegie Pension Fund.**—"In the year 1910 Mr. Andrew Carnegie generously offered to donate $4,000,000 (from the Carnegie Relief Fund, which was originally created in 1901) for the purpose of establishing a fund to take care of the United States Steel Corporation's employees in their old age or when physically incapacitated for work, provided the Corporation would donate $8,000,000 for the same purpose, such allowance or pensions to be paid from the joint income of the $12,000,000 and to be handled and administered by a board of directors through a manager appointed by the board.

"Thus was created the United States Steel and Carnegie Pension Fund, an organization which has since its inception paid out gratuitously for the support and

comfort of its old and disabled employes the fabulous sum of $6,828,460.75, as per copy of the Pension Board's annual report following this article.

"Pensions may be obtained by employees of the Corporation or any other corporation controlled by the U. S. Steel Corporation, under the following conditions:

"First—Compulsory retirement.

"Second—Retirement at request of employer or employee.

"Third—Permanent incapacity.

"Compulsory retirement applies to all male employees who have been 25 years or longer in the company service and who have reached the age of 70 years, and all females who have been 25 years or longer in the service and reached the age of 60.

"Retirement at request applies to all male employees who have been 25 years or longer in the service and who have reached the age of 65, and all females who have been 25 years in the service or longer and reached the age of 55.

"Permanent incapacity applies to all employes who have served 15 years and who have been totally incapacitated through no fault of their own as a result of sickness or injury.

"Accepting a pension does not bar a man from engaging in other business, so long as such other business is not of the same character as former employment.

"No employee receiving a pension may reenter the service.

"Some 3,677 employees of the Corporation are at present enjoying the benefits of the Pension Fund, and passing the last years of their lives in comparative comfort as a result thereof." The balance of the statement concerns other specifications about pensions and the annual report for the year 1921, showing the distribution to retired employees of the various subsidiary companies of the Corporation.—*South Works Review*, Illinois Steel Co., Vol. IX, Feb.-March, 1922, p. 5.

✣

**Determining Rock Dust in Air by the Sugar Tube Method.**—"The determination of dust in the air of mines by the method now in use by the Bureau of Mines involves filtering a measured volume of air through a layer of granulated sugar; in the laboratory the sugar is then dissolved, filtered through close-texture paper, washed, the paper and dust ignited, and the incombustible matter weighed. A blank is subtracted for the sugar and other substances. The remainder represents the dust. The number of dust particles is also determined by counting those in a small volume of the sugar solution under a microscope."

This paper of 40 pages, including diagrams, plates and tables, concludes in brief as follows: Tests by the method of weighing silica dust before and after producing clouds and passing them through (sugar) filters, then of recovering and weighing the dust particles of sugar, show efficiency of dust recovery ranging from about 70 to 95 per cent. Wetting the sugar greatly increased the efficiency of the filter. Tested with tobacco smoke, sugars of different sizes show an increased filtering efficiency with increasing fineness, so that pulverized sugar of 48 to 150 mesh gives over 90 per cent efficiency. The air to be tested was passed through the filter for periods of time varying from one-half to 20 minutes.—Tech. Paper 278, *U. S. Bur. of Mines*, Dec., 1921.

✣

**Carbon Monoxide Poisoning.**—This Bulletin of 47 pages gives a description of acute poisoning as stated in American and foreign literature, including after-effects, relapsing form, unusual symptoms, effect on child of the gassing of mother, and individual susceptibility. Then follows a description of chronic poisoning as given in American and foreign literature. Two pages are given to other constituents of industrial gases (carbon dioxide, nitrogen, hydrogen, benzol, toluol, sulphurated hydrogen, hydrocyanic acid and etheylene). The usual sources of carbon monoxide gas are given as: manufacture of steel, coal and metal mining, illuminating gas, smelting and coke by-products, garage workers, linotypers and certain unusual cases, such as that described by Harris in a clothing manufacturing establishment where workers were overcome by gases from chimneys down the hallways from the roof, and as described by Albaugh in a bunk-house at a construction camp in the midst of winter, when gas from smouldering cinders on which the bunk-house had been erected, but to which no cinders had been added for many months caused several fatal cases at different times. The sur-

face of the cinder dump was frozen over except under the building, thus permitting all the accumulated fumes to pass up into the building. Other similar unusual instances are also cited.—Alice Hamilton, Bull. 291, *U. S. Bur. of Labor Statistics*, Dec., 1921.

✚

**Neon, a Rare Element, Appears as an Important Factor in Reducing Certain Health and Accident Hazards.**—"Neon is one of the rare gases of the air and was discovered in 1898 by Sir William Ramsey. No practical use of it was made until about a year ago, when a New York concern produced an incandescent lamp without filaments—using neon in place of wire, inasmuch as neon becomes luminous when electrified, and emits an orange-red glow.

"Neon lamps are used for exit lights in buildings and are said to be particularly visible through fog or smoke.

"In the spark-detecting instrument neon is useful because it offers exceedingly low resistance to the passage of electricity. A spark that will jump only one inch in air will jump approximately 75 inches in neon.

"It also has been used in combination with mercury to produce a powerful white light instead of the unpleasant greenish-blue light thrown off by mercury lamps now in general use. The orange-red color produced by neon is said to combine satisfactorily with blue glow from the mercury vapor in building up a white light.

"There are five rare gases which comprise about 1.86 per cent of the air. They are helium, argon, krypton, neon and xenon. Argon has recently been made use of as a 'filling' for incandescent lamps, because of its low heat-conducting property. Helium is now widely known as the most successful non-inflammable balloon gas ever discovered. Uses for krypton and xenon are still to be developed.—The *General Chemical Bulletin*, Vol. VIII, No. 5, March, 1922, p. 143.

✚

**A Year's Atmospheric Pollution.**—The seventh report of the Committee for the Investigation of Atmospheric Pollution covers the year ending March 31, 1921, when 31 stations were in operation (England) for measuring deposited impurity from the air. The amounts range from about 60 English tons per square mile down to 10 tons. London occupied an intermediate position with from 30 to 35 tons. The deposit was less than in the previous winter in 19 cases, and greater in 4. On the other hand, there was a fairly general increase—chiefly of tarry matter—in the summer deposit. The tests further show that London air is purest between midnight and 6 A. M. On week days a rapid increase in the amount of impurity takes place after 6 A. M. and on Sundays after 7 A. M. This continues till the maximum for the day is reached at about 10 A. M. The maximum seldom lasts for more than an hour, when it falls off rapidly, to be followed by a second, but lower, maximum about 4-5 P. M. The amount of impurity bears a close relationship to human activities. Even the peak between 4 and 5 P. M. may be a tea-time rise. The report confirms the view that urban air pollution is due to unburned fuel from many sources and that a campaign for pure air must be a comprehensive one.—*Lancet* (London), April 1, 1922, Vol. CCII, p. 649.

✚

**Efficiency in Silk Weaving.**—"Mr. Elton holds that the observations already made have at least established that good silk weavers (1) possess good eyesight, (2) are observant, (3) are dexterous with both hands, (4) have a delicate sense of touch, and (5) can stand for long periods. Clearly, a girl who has not these qualities should not waste time in learning weaving, and an employer should not incur expenditure in training such a person. The advantages to industrial contentment and well-being, and to profits, from extension of work on these lines is obvious."—*Lancet* (London), April 1, 1922, Vol. CCII, p. 652.

✚

**The National Institute of Industrial Psychology (Great Britain).**—The report of a year's work is here summarized. The Institute was incorporated in February of last year. An institute on similar lines was started in New York, upon the council of which were many of the leading scientists of America and the President of Yale University.

"The object of the National Institute of Industrial Psychology was to assist employers to find the best way to do any particular piece of work, and to find the best

man to do it, while an appeal was made to all classes, for the employer would benefit by an increased output and the worker would gain higher wages and more leisure. The work would also help to strike directly at some of the root causes of illness, poverty, unhappiness and crime, and therefore should receive the support of the socialist and the philanthropist.

"Dr. Myers said that the work already done had earned the gratitude of both employers and employed. Tests had been devised for all classes of workers and the application of these tests facilitated the selection of candidates. The methods had been extensively employed in the United States, and instruction and research in industrial psychology were carried on in most of the American universities. In Germany there were many laboratories concerned in industrial psychology at such places as Berlin, Frankfurt, Munich and Leipzig, and he instanced the fact that as a result of this kind of research the big Berlin Tramway Company had saved during one year no less than 12 million marks. Germany, he said, hoped to secure the lead in commerce and industry by paying attention to the human aspect of the workers, just as in previous days she advanced by paying attention to the material aspect.

"Lord Haldane expressed the opinion that unrest prevalent in this and other countries, which arose out of the relations between capital and labor, could be enormously reduced if the methods and principles advocated by the Institute were put into practice. Many of our troubles, said Lord Haldane, were due to want of knowledge and not to lack of desire to do right. He instanced how the scandal of the concentration camps in the South African war was ended as soon as the physiologist had shown that the food of the women and children, though generous, was physiologically unsuitable, and how, while he was at the War Office, the physiologists had shown the unsuitability of the food on which soldiers were then forced to march. It was neither capital nor labor that created work, he continued, but mind, and therefore the more that mind was developed the more progress would be made. The worker was keenly interested in getting more leisure for educational improvement, and the work of the Institute would in a great measure relieve labor from the feeling that men and women were only machines; making the worker comfortable would cause him to give his output willingly. Lord Haldane believed that we were on the eve of recognizing generally that the human being was not a machine, but a living organism, and he hazarded the opinion that within 20 years a psychological expert would be at the elbow of every manager of every great concern to aid him in increasing the efficiency of his business, promoting at the same time the happiness, health and comfort of the worker. The following resolution was passed unanimously:

"'In view of the present serious economic situation and of the necessity to reduce costs of production and to increase the total national output, this meeting is of the opinion that (a) a more complete and scientific development of the nation's human resources and a reduction of wasteful and misapplied energy are matters of urgent national importance; (b) the methods adopted by the National Institute of Industrial Psychology have been shown to reduce costs of production, to promote the development of individual ability, to eliminate unnecessary effort and fatigue, and to improve the health and well-being of the worker; (c) it is imperative that a national fund should be immediately established to enable the Institute to extend its sphere of usefulness and to continue the necessary researches into the scientific problems involved.'" — *Lancet* (London), April 1, 1922, Vol. CCII, p. 673.

✣

**Changes in the Reaction of the Blood During Anaphylactic Shock.**—There is a diminished alkalinity of the blood during anaphylactic shock, apparently in proportion with the severity of the symptoms. This change in reaction may become so great as to be incompatible with life. The altered reaction of the blood is accompanied by a roughly proportional lowering of the alkali reserve. Slight changes (usually an increase) in the concentration of the sugar of the blood occur in anaphylactic shock, but not to the degree observed in prolonged acidosis.—Edwin F. Hirsch and J. Lisle Williams, *Jour. Inf. Dis.* 30, 259, (1922).

# PUBLIC HEALTH LABORATORY NOTES

Abstracted by ARTHUR LEDERER, M. D.

**Demonstration of Lepra Bacilli by Aspiration of Nodules.**—Characteristic lepra bacilli may be demonstrated in smears by acupuncture of lesions, a method which is simple, virtually painless, and easy to carry out in timid and apprehensive patients. The technic consists in the use of a syringe with tightly fitting plunger, a small record syringe by preference, a short pointed needle of average gage, and a few drops of salt solution or distilled water. The node is first gently massaged in order to bring as much fluid into it as possible. The needle is then introduced, after careful cleansing of the cutaneous surface, and the salt solution or distilled water slowly injected and withdrawn several times, thus making a sort of emulsion of the tissue about the needle point. The needle and its contents are then withdrawn, and smears are made from the fluid.—S. S. Greenbaum, and Jay F. Schamberg, *Jour. A. M. A.* 78, 1295 (1922).

✣

**Bacteriology of Normal Infants' Urine.**—The authors found the urine of seventy infants sterile on culture in from one-third to one-half of the experiments. Streptococcus lacticus was only exceptionally found in the urine. It is stated that the chances of contamination are so great that the presence of organisms in the urine does not prove, without further control, that they have come from the kidney.—H. F. Helmholz and F. Millikin, *Am. Jour. Dis. Children*, 23, 309 (1922); *Jour. A. M. A.* 78, 1227 (1922).

✣

**Standardization of Hemoglobinometer Findings.**—The author remarks that in no other point of clinical medicine is there so much confusion in terms as in the estimation of the hemoglobin in the blood. It is expressed by a percentage of the normal, but there is no uniformity in the estimation of the normal. The sexes vary by 10 per cent. Colorimeters can be standardized by taking the average of a large number of healthy persons, or by comparing with a certain standard instrument, but the best method is to ascertain the iron content of the hemoglobin, its absorption of light in the spectrophotometer, and its capacity for taking up oxygen. The latter seems to be most promising, especially by van Slyke's technic. The ferricyanide method gives too low values. An oxygen capacity of 18.5 per cent can be regarded as corresponding to 100 per cent hemoglobin and about 5 millions of normal erythrocytes, which gives the color index as 1 and the cell volume as 43 per cent.—H. C. Gram, *Ugeskrift for Laeger*, Copenhagen, 84, 215 (1922); *Jour. A. M. A.* 78, 1242 (1922).

✣

**Differences between Bence-Jones Proteins from Various Sources.**—Twelve preparations of Bence-Jones protein obtained by various procedures from the urines of 5 patients, who had Bence-Jones proteinuria associated with several different diseases were compared immunologically. Precipitin and complement fixation tests and anaphylactic reactions were studied with these preparations and the antisera obtained by immunizing rabbits to some of them. Under the term "Bence-Jones protein" have been grouped a number of proteins which are similar but not identical. Certainly two, and possibly three groups of Bence-Jones proteins are recognizable by immunological tests.—S. Bayne-Jones and D. Wright Wilson, *Bull. Johns Hopkins Hosp.*, 33, 119, (1922).

✣

**A Suggested Modification of the Wright Opsonic Technique.**—The Wright opsonic index is not a reliable measure of an animal's phagocytic capacity whenever the white blood count is above or below the normal. The *differential opsonic* index seems generally to be a more dependable measure of phagocytic defense than the Wright opsonic index. Depression in phagocytic activity is not an invariable phenomenon associated with fatal infections. With the possible exception of cases with leucopenia, the relative phagocytic power of an infected animal is never lower than the opsonic index indicates, but is sometimes, indeed quite

often, very much higher. The opsonic index, with the exception noted above, never does more than express the minimal limitations of the animal's phagocytic defense.—Howard B. Cross, *Bull. Johns Hopkins Hosp.*, 33, 142, (1922).

✣

**Bacterial Nutrition Study.**—A hemophilic bacillus has been found which requires the addition of only an autoclave-stable substance as a growth accessory factor.—T. M. Rivers, *Bull. Johns Hopkins Hosp.*, 33, 149, (1922).

✣

**Determination of Specific Gravities of Minimal Amounts of Liquid.**—The apparatus described permits the rapid and accurate determination of as little as one drop of body fluids. It is based upon the mixturemetric principle. A special hydrometer is required to obtain the reading. The method has been in use for some time in the laboratory of the Prudential Insurance Company. The article is accompanied by a number of illustrations.—William G. Exton, *Trans. Am. Urol. Assoc.*, Vol. XII (1920).

✣

**B. Lactimorbi in the Throats of Cats.**—The occurrence of B. lactimorbi in the throat of cats is described and the danger of this bacillus being mistaken for B. diphtheriæ is emphasized.—Roger G. Perkins and James K. Shen, *Jour. Inf. Dis.* 30, 505 (1922).

✣

**An Epizootic Among Guinea Pigs due to a Parathyphoid B. Bacillus.**—An infectious disease which developed among the laboratory guinea pigs during the summer of 1920 was characterized by the occurrence of multiple tubercle-like lesions of the spleen and liver. The disease was of the type to which the name pseudotuberculosis has been applied. The infection quickly assumed epizootic proportions and led to the deaths of more than 500 animals before it was brought under control. At the height of the epizootic many of the guinea pigs died without typical lesions but with positive blood cultures. Females were much more susceptible to spontaneous infection than males, and pregnant females were especially susceptible. In pregnant animals purulent metritis was not infrequent. From the infected animals there was isolated a Gram negative, motile bacillus which had the cultural characteristics of the colon-typhoid intermediate group. It fermented xylose, arabinose and dulcitol readily, quickly formed alkali in milk, and darkened lead acetate agar within 24 hours. The bacillus was isolated, usually in pure culture, from the lesions and from the heart blood. The strain was virulent on artificial inoculation for guinea-pigs, rabbits, white mice and white rats. The epizootic was apparently brought under control by immunization of the guinea-pig stock with a killed polyvalent suspension of the organism.—K. M. Howell and O. T. Schultz, *Jour. Inf. Dis.*, 30, 516 (1922).

✣

**The Action of Neoarsphenamin and Neosalvarsan on the Phagocytic Activity of Leukocytes.**—In proper concentrations neoarsphenamin and neosalvarsan may increase the phagocytic activity of leukocytes both in vitro and vivo. In vivo the stimulating effect is rapid and of short duration, occurring as a rule within 30 minutes after intravenous injection. Further study is necessary to determine what part, if any, this stimulus of the phagocytic activity of the leukocytes plays in the curative action of the neoarsphenamin and allied products.—Ruth Tunnicliff, *Jour. Inf. Dis.*, 30, 545 (1922).

✣

**A Comparison of Several Clinical Quantitative Blood Sugar Methods.**—In interpreting the blood sugar findings obtained in any laboratory, it is of the utmost importance to the clinician that he be advised of the method employed in the laboratory in question, and also of the range of normal figures for the method as actually determined in the laboratory. The choice of a blood sugar method may be considered a matter of individual preference, provided the foregoing precautions are taken in interpreting the figures obtained. However, the authors believe that there is some evidence to indicate that, in some bloods containing a high percentage of sugar, the Benedict modification of the method of Lewis and Benedict does not yield results as reliable as the other methods discussed in this article. The Benedict and the Myers and Bailey modifications of the method of Lewis and Benedict, as well as the latest modification of the method of Folin and Wu, have impressed the authors as being on practically an equal footing as regards simplicity of technic.—William

Thalhimer and Helen Updegraff, *Jour. A. M. A.* 78, 1383 (1922).

✣

**Collodion Sacs for Aerobic and Anærobic Bacterial Cultivation.**—A simple and convenient method is described for the preparation and use of collodion sacs for ærobic and anærobic bacterial cultivation in vitro. The sacs are suitable for the study of various problems in bacterial growth and metabolism. By their use with the Smith-Noguchi tissue medium, certain microörganisms may be grown in the absence of the confusing antigenic protein precipitate characteristic of cultures containing fresh tissue, and thus the organisms are obtained in a suitable condition for serological study.—F. L. Gates, *J. Exp. Med.* 35, 635 (1922).

✣

**Micro Gas Analysis of Bacterial Cultures.**—During a study of anærobic bacteria the author made use of small amounts of media covered by vaseline in test tubes. It was noticed that as gas was formed by a culture the vaseline was forced up the tube, the vaseline plug remaining perfectly intact and acting as a self-lubricating piston at the temperature of the room or incubator. By means of a Luer tuberculine syringe with a long fine needle attached by means of a short length of capillary rubber tubing, a sample of gas may be withdrawn and the carbon dioxide determined in the syringe. The data presented serve to illustrate the accuracy and technical possibilities of the method.—J. Howard Brown, *J. Exp. Med.* 35, 667 (1922).

✣

**Effect of Bile at Varying Hydrogen Ion Concentrations on Dissolution of Pneumococci.**—Dissolution of pneumococci takes place most rapidly in bile at a slightly alkaline reaction. This is probably due to death of the organisms and activation of the endocellular enzyme at its optimum hydrogen ion concentration.—F. T. Lord and R. N. Nye, *J. Exp. Med.* 35, 703 (1922).

✣

**Sterilization of Surgical Instruments.**—No growth was obtained when either glass rods or scalpels, on which nonspore-forming organisms were present, were burned off with methyl alcohol. Glass rods and scalpels could not be sterilized by burning them off with methyl alcohol when spores of B. anthracis, B. cereus, B. botulinus, B. tetani, etc., were present. The burning off of glass rods and scalpels with a methyl alcohol-formalin mixture (3 to 1) gave excellent results except in the case of the anærobes when grease and oil were present. When absolute sterility is desired, the burning off of a surface with an inflammable fluid cannot always be relied upon.—E. S. Sanderson, *J. Lab. Clin. Med.* 7, 360 (1922).

✣

**Effect of Time Element on Cell Counts in Spinal Fluid.**—The cells in clear spinal fluids, collected in clean tubes and tightly stoppered, may in the absence of a macroscopic pellicle, sediment or web be safely counted if thoroughly mixed at any time up to at least 15 hours. If the spinal fluid is not clear or becomes cloudy, the results of counts at different times are apt to vary. It is desirable but not necessary for fluids to be collected in sterile tubes. Whether the fluids are kept at room temperature or in the ice box seems to be of little consequence.—James Wynn, *J. Lab. Clin. Med.* 7, 273 (1922).

✣

**Wassermann Reaction in Tuberculosis.**—The serum of seventy patients suffering from tuberculosis was examined by the author by the Wassermann test with the object of finding out if this disease was responsible for a positive reaction. Forty were cases of pulmonary tuberculosis, fourteen were cases of tuberculosis of the lymphatic glands, and sixteen were cases of abdominal tuberculosis. Fourteen out of these seventy cases gave a positive Wassermann reaction, eight of the pulmonary group; three each of the glandular and abdominal group.—K. R. K. Iyengar, *Indian J. Med. Research*, 9, 369 (1921); *Jour. A. M. A.*, 78, 1493 (1922).

✣

**Suspension Stability of the Erythrocytes in the Tuberculous.**—The author relates experiences with citrated blood which confirm that the speed of sedimentation of the erythrocytes is a sensitive and reliable index of the destruction of tissue that is going on. Hence it is a valuable aid in pulmonary tuberculosis as negative findings exclude an active process, and the modification of positive findings shows the trend up or down. With non-tuberculous affections of lungs and pleura the return to normal confirms the

absence of a tuberculous process. The reaction depends mainly on the amount of fibrinogen in the blood, and the test should be repeated at ten or fourteen day intervals to estimate the progress of the case. He gages the reaction by the depth of the column of plasma in a set of eight vertical pipets filled with the citrated blood, as he describes. The pipets are 30 cm. long, with a diameter of 2.5 mm. and they are graduated from the top down to the tip, 0 to 200 mm. Four parts of the 3.8 per cent solution of sodium citrate are mixed with sixteen parts of blood, and set aside in a test tube for four or five hours. Charts are given of a number of cases. Of course the sedimentation reaction is not specific for tuberculosis any more than the temperature or the pulse, but it gives a better idea of the actual condition than the tuberculin test, as the latter may be positive with an inactive focus. —G. Katz, *Zeitschrift Tuberkulose*, 35, 401 (1922); *Jour. A. M. A.* 78, 1502 (1922).

✣

**The Use of Original Culture for Virulence Tests.**—The original diagnostic culture can be used advantageously for the diphtheria bacillus virulence test by the intracutaneous method. The method eliminates the necessity of isolating pure cultures and makes it possible to test any desired number of cultures. The results obtained by this method check with those obtained by the pure culture method, and moreover, it is possible to determine the virulence of cultures when pure cultures cannot be isolated.—Leon C. Havens and Horace M. Powell, *Am. J. Hyg.* 2, 234 (1922).

✣

**Complement Fixation in Tuberculous Infections.**—The authors are not satisfied that complement fixation tests afford a reliable means of clinical diagnosis in tuberculous affections. Too little attention has been paid to so-called nonspecific reactions and it is possible that some of the results obtained are fallacious.—Arthur Sellers and E. N. Ramsbottom, *J. Path. Bact.* 25, 247 (1922).

✣

**Bottled Mineral Waters of Unusual Composition.**—The composition of the domestic and foreign bottled mineral waters examined in the Water and Beverage Laboratory of the Bureau of Chemistry during the last fifteen years is discussed with particular reference to the presence of unusual constituents or of ordinary constituents present in unusual amounts. The majority of these waters belong to one or another of the three following types: first, those in which the dissolved mineral constituents consist chiefly of dissolved limestone or of dolomitic limestone; second, of sodium bicarbonate and sodium chloride; third, of either or both sodium sulphate and magnesium sulphate. Usually a determination of the acid radicals, namely, nitrate, chloride, sulphate, carbonate and bicarbonate and of the basic radicals, iron, aluminum, calcium and magnesium, together with a calculation of the sodium by difference, will furnish sufficient knowledge as to the composition of a water, provided qualitative tests are made for the more unusual constituents. Ordinarily, constituents other than those mentioned, and silica are present only in traces. There have been some exceptions to the above, and instead of traces only, substantial amounts of certain constituents enumerated below were found. The following maximum amounts of constituents expressed in milligrams per liter are reported: Nitrate 5700.; nitrite 10.; hydrogen sulphide 496.; bromide 1510.; iodide 30.; fluoride 0.4; phosphate 32950.; borate 2000.; saline ammonia 69.; lithium artificial water 288.; natural water 32.; strontium 200.; barium 18.; manganese 50.; and arsenic 15. The composition of the so-called iron and alum waters is discussed briefly.—W. W. Skinner, C. H. Badger and J. W. Sale, Water and Beverage Laboratory, Bureau of Chemistry.

✣

**Sugar in Blood Corpuscles.**—The author asserts that in blood in its natural condition the blood corpuscles are nearly, if not entirely, free from sugar. In diabetes, the corpuscles are permeable for sugar.—L. Csaki, *Wien. Arch. inn. Med.* 3, 459, (1922); *Jour. A. M. A.* 78, 770, (1922).

## CONVENTIONS, CONFERENCES AND MEETINGS

This calendar is published through the cooperation of the National Health Council, 370 Seventh Ave., New York City. The Council will be glad to answer promptly any written or telegraphic inquiries regarding meeting dates in order to avoid conflicts.

June 21, National Conference of Jewish Social Service, Providence, R. I.

June 22-29, National Conference of Social Work, New Biltmore, Providence, R. I.

June 22-24, American Association for the Advancement of Science, summer meeting, Salt Lake City, Utah.

June 24, Eugenics Research Association, Eugenics Record office, Cold Spring Harbor, L. I.

Biennial Congress on Nursing:

June 26-30, American Nurses's Association, Seattle, Wash.

June 26-30, National League for Nursing Education, Seattle, Wash.

June 26-31, National Organization for Public Health Nursing, Seattle, Wash.

June 27, National Conference on Child Labor, Providence, R. I.

June 27-29, Annual Conference, State Sanitary Officers and Public Health Nurses, Saratoga, N. Y.

June 26-July 1, U. S. Bureau of Education and Child Health Organization, Lake Mohonk, N. Y.

July 4-10, National Education Association, Hotel Plaza, Boston, Mass.

July 4, Association Medical Health Officers of Nova Scotia, Sydney, N. S.

July 17-21, National Dental Association, Ambassador Hotel, Los Angeles.

August 22-25, National Medical Association, Washington, D. C.

August 28-Sept. 2, National Safety Congress, Detroit, Mich.

**Oct. 16-19, Fifty-First Annual Meeting, A. P. H. A., Hotel Statler, Cleveland, Ohio.**

Foreign Meetings:

June 24-28, First International Conference of Open Air Schools, Paris.

July 6-8, League to Combat Infant Mortality (International Congress), Paris.

July 11-13, International Union Against Tuberculosis, Brussels.

July 21-28, British Association, Section on Public Health, Glasgow.

August 17-Sept. 5, Third Pan-American Congress on Infant Welfare, Rio de Janeiro.

**School of Hygiene and Public Health of The University of Pennsylvania**

Twelfth year began Friday, September 30, 1921. Courses are given in preventive medicine and epidemiology; industrial, personal, camp, school, meat and milk hygiene; sanitary engineering, entomology, parasitology, bacteriology, immunology and serology, sanitary chemistry, vital statistics.

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